**UNIVERSIDAD AUTÓNOMA DE MADRID**


**Facultad de Medicina**

**Departamento de Psiquiatría**

# FACTORES PREDICTIVOS DE BÚSQUEDA DE TRATAMIENTO EN E.E.U.U

**TESIS DOCTORAL**

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*I measure every grief I meet*

*With narrow, probing Eyes*

*I wonder if it weighs like mine*

*Or has an easier size*

*Yo mido toda pena que me encuentro*

*Con ojos inquisidores y atentos*

*Me pregunto si pesa como pesa la mia*

*O si es de tamaño llevadero*

Emily Dickinson

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**CERTIFICA QUE:** El trabajo de investigación presentado por **Dña. Miren Iza Cia**, titulado "Factores predictivos de búsqueda de tratamiento en EEUU" realizado bajo mi dirección, reúne los requisitos científicos, metodológicos y de originalidad suficientes para ser defendido como Tesis Doctoral ante el Tribunal que legalmente proceda.

Y para que surta los efectos oportunos, se firma la presente en Madrid a 3 de marzo de 2018.

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# 1 RESUMEN

Los trastornos de ansiedad, los trastornos por uso de sustancias y los trastornos por uso de drogas de prescripción, están entre los trastornos más prevalentes en la población en Estados Unidos. Según los estudios realizados previamente, se ha visto que las personas que padecen un trastorno mental en Estados Unidos, acuden a tratamiento muchos años después del inicio de los síntomas y muchas veces no acuden nunca, lo que supone un enorme gasto social en concepto de improductividad, estrés en el entorno social y familiar, y desarrollo de otras enfermedades médicas y psiquiátricas. El propósito de esta investigación es conocer los factores que, o bien favorecen, o bien entorpecen la búsqueda de tratamiento, y cuánto tiempo tardan los individuos en acudir a un dispositivo de la comunidad en busca de tratamiento. Para llevar a cabo dicha investigación, se utilizó la Wave 2 de la encuesta poblacional NESARC (National Epidemiologic Survey on Alcohol and Related Conditions) que incluyó 34.653 individuos. Se realizó un análisis de supervivencia para estudiar la probabilidad de que una persona acuda a tratamiento al cabo de 1 año desde el inicio de los síntomas, al cabo de 10 años desde el inicio de los síntomas y por último, a lo largo de toda su vida, y se estudió este modelo según las siguientes variables sociodemográficas: sexo, edad, raza, natividad o lugar de nacimiento, nivel de educación, edad de inicio del trastorno, estado civil, y variables de comorbilidad con otros trastornos psiquiátricos del Eje I y del Eje II.

Los resultados indican que: 1) existe una notable variabilidad en cuanto al comportamiento de búsqueda de tratamiento según se trate de un trastorno u otro, con variaciones también entre trastornos pertenecientes a la misma categoría diagnóstica, por ejemplo los individuos que padecen trastorno de pánico acuden mucho antes a

tratamiento (1 año) que los que padecen otro trastorno de ansiedad, como la fobia social (16 años). 2) Los factores sociodemográficos son determinantes a la hora de buscar tratamiento. 3) algunos trastornos psiquiátricos comórbidos favorecen la búsqueda de tratamiento y otros la entorpecen.

El conocimiento en profundidad del comportamiento de los individuos en cuanto a la búsqueda de tratamiento es clave para poder identificar cuáles son las poblaciones que tienen un peor acceso a los recursos, de cara a mejorar las políticas de gestión y accesibilidad.

# 2 INTRODUCCIÓN

## *2.1 Salud y enfermedad*

En 1948, la Organización Mundial de la Salud definió la salud como: "un estado de completo bienestar físico, mental y social, y no la mera ausencia de afecciones o enfermedades". Partiendo de este ideal, los objetivos de los programas de salud son definidos en términos de prevención y tratamiento de las enfermedades. La enfermedad es aquello que la persona experimenta y que conduce al malestar, dolor, angustia, discapacidad de cualquier tipo, incluyendo lesiones o enfermedades psiquiátricas. Igualmente importante, es la posibilidad de diagnosticar y clasificar las enfermedades específicas para diseñar intervenciones sanitarias útiles y eficientes en una población.

Todos los sistemas sanitarios del mundo se ven afectados por los cambios constantes que se observan en la presentación de las enfermedades y la dinámica cambiante de la población. Estos sistemas se ven obligados a responder a esta demanda de manera eficaz, según los recursos de cada país y las decisiones han de estar basadas en los patrones de las enfermedades, sus factores de riesgo y la eficacia de las diversas intervenciones posibles. Un requisito indispensable para el desarrollo equitativo de una salud global, es la recogida rigurosa de datos durante periodos largos de tiempo, y posteriormente analizarlos adecuadamente.

## *2.2 La enfermedad mental*

Centrándonos más específicamente en los trastornos mentales, entre un 10 y un 20% de la población mundial sufre de uno o más trastornos mentales, neurológicos o por abuso de sustancias. La OMS creó la categoría de "MNS disorders" (mental neurological and substance use disorders) para estos trastornos (1). Estos trastornos han sido

progresivamente reconocidos como importante causa de discapacidad en la salud global (2), también en los países en vías de desarrollo, a pesar de la existencia de otras enfermedades infecciosas y otras enfermedades no trasmisibles. Este doble peso o limitación, puede ser atribuible a la transición demográfica y epidemiológica, evidente en todos los países, y conduce a la necesidad de realizar un esfuerzo único y global para lograr asegurar un espacio de mayor atención a la salud mental en las políticas de salud a nivel mundial. Existe un fuerte nexo entre las antes mencionadas "MNS disorders", y otras preocupaciones sanitarias y sociales, incluyendo algunos de los llamados Objetivos de Desarrollo del Milenio (ODM) (Millennium Development Goals (MDGs), como la igualdad de género, la pobreza, el VIH, la educación primaria y la salud materna e infantil. La salud mental global ha de estar comprometida con la mejora de calidad de vida de los millones de individuos que sufren un trastorno mental en todo el mundo, muchos de los cuales viven en países en vías de desarrollo y no tienen un acceso adecuado a los servicios sanitarios. Además, el estigma y la discriminación relacionada con los trastornos mentales es generalizado, no es un mal exclusivo de estos países en vías de desarrollo, sino que afecta a todos los países. Con frecuencia, desventajas sociales acompañan a los trastornos mentales, pobreza, desempleo y relaciones sociales empobrecidas aumentan el riesgo de padecer trastornos mentales. Recientemente, se ha observado un creciente interés en esta área. Así, la revista Lancet se hacía eco de una apremiante necesidad de atender a las demandas de asistencia de esta población (3), y por parte de la OMS, se promociona notablemente esta causa tanto entre los profesionales como entre la sociedad civil. Si bien el diagnóstico de las enfermedades mentales caracteriza el estado de salud de ciertas personas, es la discapacidad, resultante de la interacción social de la enfermedad con los servicios

sanitarios y sociales, la que más exactamente define el estado de salud de los individuos afectados.

## *2.3 Historia de la salud mental pública*

El origen de la salud mental pública se remonta a la comunidad islámica del norte de Africa, España y Oriente Medio. Bajo la creencia de que los "locos" eran personas amadas por Dios, las sociedades islámicas emprendieron la construcción de asilos para ellos. El primero se construyó en Bagdad en el siglo VIII. Progresivamente y a lo largo y ancho de muchos países occidentales, se han implementado programas de salud mental que incluyen la integración de la persona en su propia comunidad, en un intento de desinstitucionalizar las enfermedades mentales. Este hito en la historia de la psiquiatría supone un enorme reto porque pronto se vio que la desinstitucionalización requería mucho más que simplemente dispensar la medicación, y que se necesitaba realizar un esfuerzo mayor en otros ámbitos sociales y de rehabilitación. Esto resulta más relevante y evidente en los trastornos psiquiátricos graves, como la esquizofrenia, pero también es necesario tenerlo en cuenta en el resto de trastornos mentales. La salud mental basada en la comunidad representa una ideología más que una mera política de asistencia, por eso incluye conceptos como el respeto, la honestidad, la apertura, la distribución justa y con equidad de los recursos y una respuesta a las necesidades cambiantes de los usuarios (4).

La definición de la OMS de prevención en salud mental consiste en medidas dirigidas a reducir la incidencia, prevalencia y recurrencia de los trastornos mentales, la duración de los síntomas, los factores de riesgo de las enfermedades mentales y reduciendo el impacto de la enfermedad en la persona afectada, es decir habría que realizar: 1) prevención primaria, interviniendo en los factores de riesgo, 2) prevención secundaria,

relacionada con el diagnóstico precoz y el tratamiento temprano, 3) prevención terciaria, enfocada a reducir el impacto o la discapacidad de quien sufre una enfermedad mental, contemplando los aspectos instrumentales y la integración social. La vigilancia de la salud pública en salud mental aparece tras el desarrollo de la de enfermedades transmisibles y la de enfermedades crónicas, como diabetes, cáncer o enfermedades vasculares. La vigilancia de la salud pública es la práctica sistemática de la recogida, análisis, interpretación y difusión de datos de salud para la planificación, puesta en práctica y evaluación de las acciones de salud pública

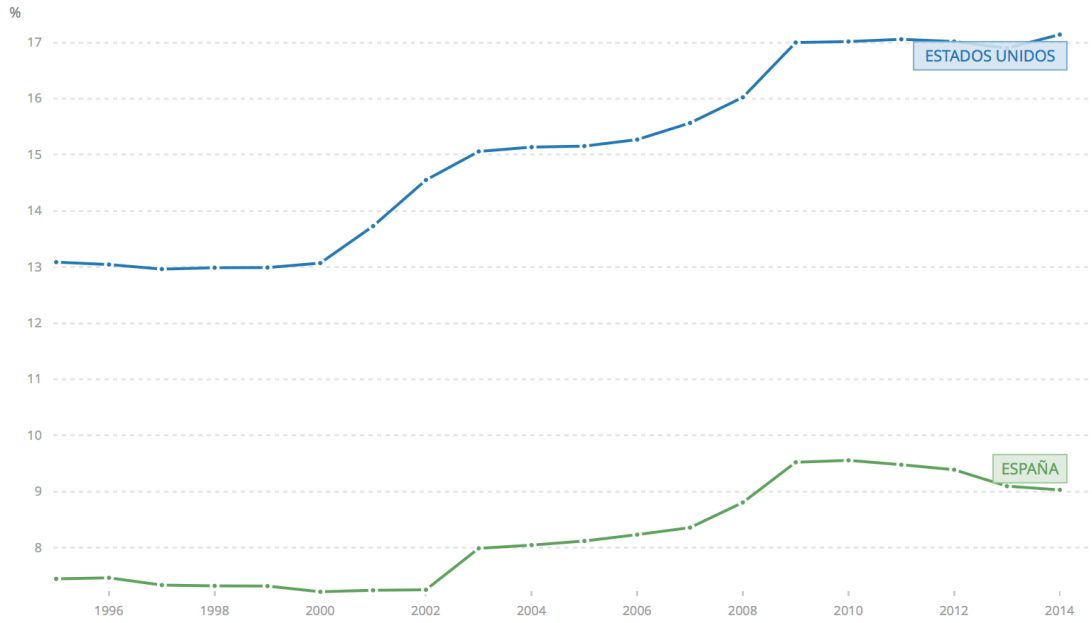
## *2.4 Salud mental en EEUU*

A finales de los años 70, en Estados Unidos comenzó a haber un interés creciente en conocer datos precisos acerca del uso de los servicios de salud mental en el país; en este campo se llevó a cabo la encuesta Epidemiologic Catchment Area (ECA)(5, 6), entre los años 1980 y 1985, en 20.861 personas en hogares e instituciones de poblaciones de un mínimo de 200.000 habitantes, con el objetivo de determinar la prevalencia de los trastornos mentales y el uso de los dispositivos asistenciales en EEUU. Fue promovido por el NIMH (National Institute of Mental Health), y se realizaron dos olas (waves) de entrevista personal con un año de separación y una llamada telefónica entre ambas. Los diagnósticos psiquiátricos se establecían de acuerdo a los criterios del DSM-III. Uno de los hallazgos importantes del ECA fue que un porcentaje mínimo de individuos que padecían un trastorno mental acudían a tratamiento (7). Desde entonces, cada vez que se ha realizado una encuesta poblacional, la búsqueda de tratamiento y la accesibilidad a los servicios de salud han constituido aspectos importantes de las mismas, para medir la calidad de los servicios y la actitud de la población frente al sistema de asistencia y de las enfermedades mentales. En este contexto en los años 2001-2002 se lleva a cabo la

mayor encuesta poblacional de la historia, el NESARC (National Epidemiologic Survey on Alcohol and Related Conditions).

Según datos del banco mundial, en 2014 EEUU tuvo un gasto sanitario de 9.402,537 dólares por cada ciudadano, y previsiblemente va a aumentar en los próximos años. En España, este valor desciende hasta los 2.658,27 dólares.

**Figura 1. Gasto sanitario USA vs España expresado en %PIB**




EEUU carece de un sanidad pública universal, pero algunos grupos sociales sí poseen un seguro médico financiado por el estado, como en el caso del Medicare y el Medicaid. El programa Medicare es un programa de la administración federal que cubre la sanidad de trabajadores y jubilados y sus cónyuges, a partir de los 65 años de edad, así como la de los menores de 65 años discapacitados. Cubre la asistencia hospitalaria gratuita durante 60 días y asistencia médica, por la que hay que pagar una cuota mensual y hacerse cargo del 20% de la factura de la consulta. Unos 44 millones de

estadounidenses se benefician de este programa. Existen varias opciones dentro del programa Medicare: Parte A (seguro de hospital) que ayuda a cubrir los gastos de personas internadas en hospitales, incluyendo hospitales de acceso urgente, y centros de enfermería especializada que no sean de cuidados crónicos. Generalmente no hay que pagar una prima por Medicare Parte A si el beneficiario de Medicare o su esposa pagaron impuestos de Medicare cuando trabajaban. La otra opción es Medicare Parte B (seguro médico) que ayuda a cubrir los gastos médicos y de consulta externa. También cubre otros servicios médicos que la Parte A no cubre, tales como la fisioterapia, debiendo abonar primas mensuales para acogerse al plan o Parte B. La cobertura de medicinas está incluida con la prima mensual. Si el beneficiario es de ingresos limitados, puede obtener ayuda para poder comprar medicinas de receta por poco dinero, o conseguirlas libres de costo. Desde el 1 de enero de 2006, Medicare cuenta con una prestación farmacéutica a la que se puede acceder voluntariamente mediante el pago de una prima mensual. La prestación tiene una franquicia de 250 dólares, a partir de los cuales el beneficiario sólo paga el 25% del gasto hasta 2.250 dólares anuales. La prestación no cuenta con cobertura para el gasto anual entre 2.251 y 5.100 dólares, haciéndose el beneficiario cargo de la totalidad de la factura entre dichas cifras. A partir de un gasto anual de 5.100 dólares, el programa se hace cargo del 95% del costo de los medicamentos.

El programa Medicaid está regulado para toda la federación pero gestionado y administrado por cada Estado en particular. Cada Estado establece sus propias normas de elegibilidad y cobertura dentro de los parámetros federales generales. El programa conjunto federal-estatal ofrece cobertura sanitaria a las personas con bajos ingresos y sin activos. Aunque la administración federal lo financia en su mayor parte y establece las normas generales de gestión, los Estados cuentan con gran libertad en el establecimiento

de las normativas de acceso y cobertura. El programa Medicaid otorga beneficios médicos a personas de bajos recursos que no tienen seguro médico o que tienen un seguro médico de poca cobertura. El gobierno federal establece pautas generales para la administración de los beneficios de Medicaid. Sin embargo, cada Estado en particular determina los requisitos específicos de elegibilidad para recibir los beneficios de Medicaid, así como también el tipo y el alcance de los servicios prestados. Es por eso que es posible que una persona que reúna los requisitos para Medicaid en un Estado no lo haga en otro. Para tener cobertura con este programa, hay que ser ciudadano o residente permanente de los EEUU, necesitar asistencia médica, y tener una situación económica definida como de bajos ingresos o muy bajos ingresos. También se puede obtener cobertura estando embarazada, o teniendo uno o más hijos con discapacidad o tener a su cargo a menores de 19 años de edad.

El programa SCHIP o *State Children's Health Insurance Program*, es un conjunto federal estatal que ofrece cobertura sanitaria a los menores de edad cuyas familias no cumplen los requisitos de acceso a Medicaid pero no pueden afrontar el costo de un seguro sanitario privado. La financiación y normas generales también son federales, pero los Estados cuentan con gran flexibilidad en la administración y gestión del programa.

Adicionalmente a estos tres programas hay Seguros de Accidentes de Trabajo, obligatorios y subvencionados. Los Estados cuentan con leyes que ofrecen cobertura sanitaria, así como hasta las dos terceras partes del salario, a los trabajadores que sufran accidentes en el puesto de trabajo. La cobertura se ofrece hasta la reincorporación al puesto de trabajo o la obtención de una pensión de invalidez. La mayor parte de los Estados obligan a las empresas a adquirir pólizas de aseguradoras privadas, aunque algunos Estados cuentan con un fondo para este fin y otros administran el sistema

directamente. La administración federal cuenta con dos programas para sus funcionarios y gestiona los de estibadores y mineros

La mayor dificultad para acceder a un seguro médico y por tanto a la asistencia sanitaria la tienen las personas autónomas y los trabajadores de pequeñas empresas, ya que en las últimas décadas el precio de las pólizas de seguros han aumentado en más de un 80 %.

### 2.4.1 Obamacare o The patient Protection and Affordable Care Act

El sistema sanitario en EEUU ha tratado de reformarse en múltiples ocasiones desde el año 1850 a lo largo de la historia reciente de la mano del Partido Demócrata. Siempre existió una fuerte oposición a cualquier medida que pudiese identificarse con una "socialización" de la sociedad, e hizo fracasar todas las reformas hasta el año 1965, año en que la asistencia sanitaria se fue organizando gracias a acciones de voluntariado y gestionada por asociaciones sin ánimo de lucro. Instituciones como la Cruz Azul (Blue Cross) y el Escudo Azul (Blue Shield) se extendieron por todo el país.

Ya hace más de cien años que el presidente Theodore Roosevelt, en 1912, planteó por primera vez en la historia americana, la necesidad de crear un Seguro Nacional de Salud. Después, Franklin D. Roosevelt estudió la posibilidad de impulsar un programa nacional de seguros de salud durante la Gran Depresión. Roosevelt fracasó, al igual que Kennedy en 1961, en sus intentos de legislar sobre esta cuestión. Fue durante la presidencia de Lyndon B. Jhonson en 1965, cuando se reformó la seguridad social para crear los programas Medicare y Medicaid. A partir de entonces, y después con Nixon en 1973, se regularon las agrupaciones y mutualidades voluntarias para la prestación de servicios sanitarios a través de una fiscalidad favorable, y de manera creciente se han ido ocupando de la gestión de la mayor parte de la sanidad. En 1976 Jimmy Carter prometió poner en marcha un sistema de seguros con cobertura universal, pero tuvo que

abandonar esta aspiración por la crisis económica; y Ronald Reagan sugirió limitar las desgravaciones fiscales por gastos médicos para intentar, sin éxito, ajustar los precios de los seguros a la baja; lo mismo le sucedió a Bush poco tiempo después, y al presidente Bill Clinton en 1993. Estos son algunos de los más importantes intentos de reforma global y reformas parciales realizadas en el país americano. El presidente Clinton volvió a plantear la cobertura universal en su *Health Secure Plan,* que incluía también nuevas obligaciones para las empresas y nuevos mecanismos regulatorios, pero la oposición republicana y la presión en contra de las compañías de seguros hicieron fracasar las propuestas.

La última reforma importante del sistema, anterior a la de Barack Obama, fue en el año 2003 durante la presidencia de George W. Bush. Se aprobó la incorporación de la prestación farmacéutica al programa Medicare. A lo largo de sus dos mandatos, Bush insistió en crear cuentas de ahorro destinadas al gasto sanitario que tuvieran importantes incentivos fiscales, como mecanismo para extender la cobertura mediante seguros privados.

Así, ha habido diversas propuestas de reformas sanitarias a nivel nacional, pero el sistema político norteamericano exige que una reforma legal de este tipo consiga el acuerdo entre los partidos demócrata y republicano obteniendo mayorías suficientes tanto en la Cámara de Representantes como en el Senado y la posterior aprobación presidencial. El primer Estado que aprobó una notable extensión de la cobertura sanitaria fue Massachusetts, que aprobó un plan que combinaba reformas del mercado de seguros, subsidios gubernamentales y obligatoriedad. Massachusetts es un Estado pequeño, con elevado nivel de vida y un reducido número de personas sin cobertura sanitaria (menos del 10%), por lo que la reforma fue relativamente fácil. El gobernador de California Arnold Schwarzenegger, puso en marcha un plan similar, pero

necesitando un presupuesto significaticamente mayor para dar cobertura a los más de 6,5 millones de personas que viven en el Estado. El Estado de Pennsylvania, Vermont y Maine desarrollaron proyectos similares. Otros Estados como Illinois y Tennessee también desarrollaron planes, menos ambiciosos, aspirando a extender la cobertura sanitaria a todos los niños residentes en sus territorios.

La petición permanente de una reforma sanitaria global y universal a toda la población americana con una mejora de la cobertura sanitaria, ha sido habitual en muchas de las organizaciones civiles y sociales más importantes americanas.

En el proyecto de reforma de Obama, se habla de un plan de reforma con dos objetivos fundamentales: por un lado, reducir los costes en materia sanitaria y, por otro, asegurar una cobertura sanitaria de calidad y accesible para todos los ciudadanos norteamericanos, creando un sistema de protección social mixto entre el modelo Von Bismarck, modelo alemán, en el que la financiación proviene de las propias contribuciones de los empresarios y de trabajadores, mediante el pago de primas variables; y el modelo Beveridge, que es el modelo inglés de finales de la Segunda Guerra Mundial, de donde parte el Estado del Bienestar, en el que la financiación se realiza en su totalidad por vía tributaria. Estos dos modelos coexisten en la actualidad en los países de la OCDE.

El acceso a un seguro médico en EEUU, es cada vez más difícil económicamente para los ciudadanos y los empresarios. Desde el año 2001 las primas para la cobertura sanitaria se han visto incrementadas en un 78%. Muchos americanos pagan actualmente cantidades excesivas por una asistencia sanitaria de baja calidad y escasa. Además, diariamente, decenas de miles de americanos, se ven obligados a vender sus propiedades y a reducir de manera drástica su calidad de vida para poder afrontar los gastos sanitarios ocasionados por una enfermedad. Actualmente en EEUU un 15% de los

ciudadanos no tienen cobertura sanitaria; 53% tienen contratado un seguro que les proporciona la empresa, seguro que pierden si pierden el trabajo; el 27% tiene un seguro subvencionado por el gobierno para determinados grupos vulnerables de población, y el 5% restante tienen un seguro médico privado sin ningún tipo de ayuda, estatal o empresarial.

Barack Obama enfoca su programa de reforma en asegurar el acceso al sistema sanitario a todos los ciudadanos americanos (universalidad); mejorar la calidad asistencial y reducir los costes asistenciales. Obama habla de un Plan de Salud Nacional disponible para todos los americanos, también para aquellos con patología previa. Obama incluye en su programa la salud mental y aporta subsidios, préstamos estatales a muy bajo coste, para aquellos ciudadanos que no tengan los medios económicos suficientes para afrontar el pago de las primas de seguro médico.

Obama propone también una reforma del mercado asegurador privado, introduciendo un nuevo modelo de seguro público dentro del mercado de seguros privados, regulando de esta manera las reglas del mercado privado, con la incorporación de nuevos baremos de calidad y eficiencia, y de mantener unas primas estables. Obama hace hincapié en la calidad y en la necesidad de reducción de costes, con la integración y coordinación entre los distintos niveles asistenciales y la aplicación de nuevos Sistemas de Gestión de Enfermedades (*Disease Management*). Los diferentes planes de reforma, tanto del partido republicano como del partido demócrata, tienen puntos coincidentes y sólo se diferencian en el método para alcanzar dichos puntos a lo largo del plan de trabajo. En el plan de reforma inmediatamente anterior al de Obama, el conservador McCain aboga por la libertad del individuo y su responsabilidad (valor cultural muy arraigado en la sociedad americana), y en el plan Obama se aboga por la intervención estatal, la intervención del gobierno, creando un Sistema Nacional de Salud (SNS) y obligando al

sector privado a participar con unas reglas acordes a dicho Plan Nacional; es decir, aboga por un mayor intervencionismo estatal e interferencia en el sector privado.

El SNS promovido por Obama es similar al *National Health Service* del Reino Unido, aunque con diferencias destacables; un SNS al alcance de todos los ciudadanos americanos; y no como ahora en que sólo los individuos con muy escasos recursos, los ancianos mayores o iguales de 65 años, los pacientes con insuficiencia renal crónica en programa de diálisis o aquellos pacientes en lista de espera para trasplante renal, los inválidos y los veteranos de guerra están protegidos parcialmente por el Estado. En resumen, el Plan Obama se basa en ofrecer una mayor estabilidad y seguridad en materia sanitaria a la población americana. Para aquellas personas con un seguro en la actualidad, el Plan Obama ofrece limitación en los incrementos anuales de la cuantía de las primas de la póliza de seguro por razones de sexo o de edad; evitar anulaciones en caso de enfermedad por razones de preexistencias previas demostradas posteriormente; eliminar los cargos extra por realización de chequeos como medicina preventiva. Asimismo, para aquellas personas sin seguro médico concertado en la actualidad habla de la creación de un nuevo mercado asegurador público; de ofrecer ayudas a los empresarios y trabajadores, para la concertación de seguros médicos; creación de un nuevo seguro médico público más barato y creación de un nuevo seguro a bajo precio para aquellas personas con patologías previas declaradas.

La reforma sanitaria iniciada mediante el plan de reforma sanitaria Obama/Biden, es una reforma totalmente necesaria tanto desde el punto de vista ético y moral, como desde el punto de vista social y cómo no, desde el punto de vista económico y fiscal, con el objetivo de asegurar la sostenibilidad del sistema sanitario americano, sistema que gasta casi el doble de la media del gasto en sanidad de los países de la OCDE.

Con el fin de reducir el gasto sanitario y de incluir en el sistema a los 30 millones de personas que no tenían seguro médico, el presidente Obama firma el 23 de marzo de 2010 la "ley de protección al paciente y de los cuidados asequibles".

En el 2013, 44 millones de americanos se quedaron sin seguro médico (cerca del 16% de la población). La mayoría de los no asegurados eran familias trabajadoras y otros que simplemente no pudieron pagar un seguro médico. Uno de los principales objetivos de ObamaCare es ayudar a estas personas a tener seguro médico extendiendo la elegibilidad para obtener Medicaid ofreciendo ayuda financiera a través de los mercados de seguros médicos. Hacia el final del registro abierto en el 2014 menos del 13% de los americanos carecían de seguro. Hacia el 2015 la tasa de no asegurados ha disminuido por debajo del 10%.

### 2.4.2 Tasa de búsqueda de tratamiento psiquiátrico

A pesar de la alta prevalencia de los trastornos de ansiedad (8), de los trastornos por uso de sustancias (9, 10) y de los trastornos por uso de drogas de prescripción (11) en EEUU, se conoce poco acerca de los factores que influyen en la búsqueda de tratamiento una vez que se establece el trastorno.

Los estudios existentes demuestran que la tasa de tratamiento para la mayoría de los trastornos psiquiátricos es baja, ocasionando un alto coste económico y social (12-17). De entre los trastornos psiquiátricos comunes, la tasa más baja de tratamiento en el primer año de enfermedad la tienen los trastornos por uso de sustancias y además, es el trastorno en el que más se demora la búsqueda de tratamiento (12, 17). En una muestra poblacional de adultos, se observó que sólo la mitad de todos los casos de trastornos por uso de sustancias a lo largo de la vida, recibían o iniciaban tratamiento. Y en cuanto a los factores que influían en estas bajas tasas de tratamiento, se vio que los factores que influían en el proceso negativamente eran: una edad temprana en el momento del inicio

del trastorno, pertenecer al género masculino y pertenecer a una minoría racial (12). Esta baja tasa de tratamiento supone un alto gasto para la comunidad en concepto de las consecuencias negativas en la salud, la baja productividad y las consecuencias legales relacionadas con el consumo de sustancias ilegales.

En el caso de los trastornos por uso de drogas de prescripción, se ha observado un aumento de la prevalencia en EEUU durante las últimas décadas (18), llegando a ser del 0,30% (11), siendo las sustancias más consumidas después del cannabis y constituyendo actualmente uno de los problemas de salud pública más acuciantes en ese país. Por ello, es necesario conocer en detalle los patrones de búsqueda de tratamiento que difieren respecto a aquel de las sustancias ilícitas.

En el caso de los trastornos de ansiedad, igualmente, a pesar de la alta prevalencia (8) y de la eficacia del tratamiento (19-22), el número de personas que buscan tratamiento a lo largo de su vida es bajo (17, 23). Teniendo en cuenta que la calidad de vida de las personas que padecen trastornos de ansiedad se asemeja o es peor que la de las personas con enfermedades médicas crónicas (24), resulta de especial importancia tratar de dilucidar cuáles son los obstáculos existentes a la hora de buscar tratamiento.

### 2.4.3 Estudios previos

Algunos de los estudios más importantes llevados a cabo en el campo que nos ocupa tomaron también como muestra una encuesta poblacional nacional, la National Comorbidity Survey (NCS) con una primera vuelta que se realizó en los años 1990-1992, basada en el DSM III-R en un total de 8.098 individuos, y una segunda vuelta (NCS-R), que se realizó en los años 2001-2003, basada en el DSM-IV en un total de 9.282 individuos. Los resultados indican en general una tasa de tratamiento baja para los trastornos psiquiátricos, y con largos tiempos de demora hasta que éste tenía lugar, así, Kessler halló un retraso de 6 a 14 años en el inicio del tratamiento desde el inicio

del trastorno, y encontraron que la tasa de tratamiento fue mayor cuando la edad de inicio del trastorno era mayor y cuando los individuos pertenecían a una cohorte de edad más joven (25).

El estudio llevado a cabo por Olfson y colaboradores, se basó igualmente en la National Comorbidity Survey y en los datos de la Ontario Health Survey, con un tamaño muestral de 9.953 individuos; establecieron el diagnóstico con una versión modificada de la Composite International Diagnostic Interview, investigaron retrospectivamente la edad de inicio del trastorno y el tiempo transcurrido hasta el inicio del tratamiento mediante el método Kaplan-Meier y el análisis de supervivencia. Hallaron que el trastorno en el que antes se buscaba tratamiento era el trastorno de pánico, y los trastornos en los que más se tardaba en buscar tratamiento fueron los trastornos de adicción y las fobias. Este resultado fue igual en las dos encuestas. Sorprendentemente, no hubo diferencias significativas en cuanto al tiempo transcurrido hasta el incio del tratamiento entre los dos países, a pesar del plan de sanidad universal implementado en Ontario. En las dos encuestas se observó que los factores clínicos comórbidos eran determinantes en el tiempo de búsqueda (12).

Alegría y colaboradores investigaron la existencia de diferencias en el uso de los recursos asistenciales entre la población latina y afroamericana y la población blanca de EEUU, para ello se basaron igualmente en los datos de la National Comorbidity Survey, encontraron diferencias significativas entre los grupos étnicos en cuanto a factores demográficos como la localización geográfica, la zona de residencia, el seguro medico, el nivel de ingresos, la riqueza y el uso de los servicios de salud mental. Los resultados indicaban que los latinos con bajos ingresos tenían peor acceso a los servicios de salud especializados que los blancos con ingresos bajos (14).

Wang y colaboradores en 2005 se propusieron analizar las dificultades de acceso a tratamiento en salud mental en EEUU y el tiempo que transcurría hasta que éste tenía lugar basándose en los datos recogidos en la segunda vuelta de la National Comorbidity Survey, la NCS-R, con un tamaño muestral de 9.282 individuos; los diagnósticos psiquiátricos se establecieron con la World Health Organization Composite International Diagnostic Interview (WMH-CIDI); hallaron que los trastornos del ánimo eran los que más tratamiento recibían a lo largo de la vida y vieron que una edad de inicio temprana, pertenecer a una cohorte de edad mayor, ser varón, estar casado, tener un nivel educativo bajo y pertenecer a una minoría racial, fueron factores relacionados con el fracaso o la demora en la búsqueda de tratamiento (17).

En el 2001 Kessler y colaboradores estudiaron la tasa y la demora en el tratamiento en los trastornos por uso de sustancias en varias poblaciones. Basaron su estudio en datos de encuestas poblacionales llevadas a cabo en Ontario (n=6261), en Fresno (n=2874), una muestra nacional de EEUU (n=5388) y en Ciudad de México (n=1734). Concluyeron que la mayoría de individuos que padecían un trastorno por uso de sustancias buscaban tratamiento a lo largo de la vida, si bien, este tratamiento se solían demorar más de una década. Como factores predictivos de búsqueda de tratamiento hallaron: una edad de inicio tardía, pertenecer a una cohorte de edad más joven y criterios de dependencia de la sustancia como síntomas de abstinencia, entre otros (13).

**Tabla 1. Búsqueda de tratamiento en USA**

| AUTHORS | MUESTRA | RESULTADOS |
|---|---|---|
| Kessler 1998 | NCS * | -Tasa de tratamiento variable según el trastorno<br>-Retraso medio en búsqueda de tratamiento: 6-14 años<br>-Predictores negativos: edad de inicio temprana, cohorte de edad mayor |
| Olfson 1998 | NCS* OHS** | -Tasa de tratamiento variable según el trastorno. Mayor en trastorno de pánico, menor en trastorno por uso de sustancias y fobia.<br>-Factores clínicos determinan el tiempo de búsqueda en las dos encuestas |
| Kessler 2001 | Encuestas poblacionales en Ontario, Fresno, EEUU y Ciudad de Mexico | --Suele haber una demora de 10 años o más<br>-Predictores negativos: edad de inicio temprana, pertenecer a una cohorte de edad mayor |
| Alegría 2002 | NCS | -Minorías étnicas tienen peor acceso al tratamiento |
| Wang 2005 | NCS-R **** | -Demora en la búsqueda, menor para la depresión y mayor para algunos trastornos de ansiedad<br>-Predictores negativos: edad de inicio temprana, cohorte de edad mayor, ser varón, estar casado, nivel educativo bajo y minoría racial |

*National Comorbidity Survey **Ontario Health Service ***General practice setting, UK ****National Comorbidity Survey-Replication

# 3 OBJETIVOS E HIPOTESIS

## *3.1 OBJETIVOS*

Este trabajo tiene como objetivo determinar los diferentes factores demográficos que influyen en la búsqueda de tratamiento, favoreciendo o dificultando el acceso al mismo, en tres patologías psiquiátricas con alta prevalencia en la comunidad estadounidense, como son, los trastornos de ansiedad y los trastornos por uso de sustancias, tanto ilícitas o ilegales como las de prescripción médica.

Otro objetivo secundario del trabajo es saber cuánto tiempo se demora esa búsqueda del tratamiento desde el inicio de los citados trastornos, y por último, conocer la probabilidad de que una persona busque tratamiento por cada uno de estos trastornos a lo largo de toda su vida, de esta manera se pretende dilucidar qué grupos de la población son más vulnerables o más proclives a permanecer más tiempo sin un tratamiento adecuado para su trastorno.

## *3.2 HIPÓTESIS*

Basándonos en los resultados de los estudios previos nuestras hipótesis fueron:

### 3.2.1 La tasa de tratamiento en los trastornos a estudio es baja

La tasa de búsqueda de tratamiento durante el primer año desde el inicio del trastorno y la tasa de probabilidad acumulada a lo largo de la vida es baja en los trastornos de ansiedad, en los trastornos por uso de sustancias y en los trastornos por uso de drogas de prescripción, al igual que en el resto de trastornos mentales.

### 3.2.2 Factores sociodemográficos como predictores de búsqueda de tratamiento

Basándonos en los resultados de estudios previos hipotetizamos que factores demográficos como una mayor edad de inicio del trastorno, pertenecer a una cohorte más joven, pertenecer al género femenino y no pertenecer a una minoría étnica-racial, aumentan la probabilidad de búsqueda de tratamiento en los trastornos de ansiedad, los trastornos por uso de sustancias y los trastornos por uso de drogas de prescripción.

### 3.2.3 Predictores clínicos (comorbilidad) de búsqueda de tratamiento

Basándonos en los resultados de estudios previos hipotetizamos que padecer un trastorno psiquiátrico comórbido aumenta la probabilidad de búsqueda de tratamiento en los trastornos de ansiedad, los trastornos por uso de sustancias y trastornos por uso de drogas de prescripción.

# 4 MATERIAL Y METODOS

## *4.1 FUNDAMENTOS ÉTICOS DEL ESTUDIO*

La encuesta poblacional NESARC, es una encuesta diseñada, esponsorizada y dirigida por el National Institute on Alcohol Abuse and Alcoholism (NIAAA). Es una muestra nacional representativa de la población no institucionalizada y mayor de 18 años. Además de una extensa batería de preguntas acerca del consumo actual y pasado de alcohol y del uso de los dispositivos específicos para el tratamiento de alcoholismo, NESARC incluía otras preguntas relacionadas con el tabaco y el uso de drogas ilícitas o ilegales. Además, NESARC incluía toda una serie de preguntas que constituían el set de criterios diagnósticos según el manual diagnóstico de los trastornos mentales, cuarta edición (DSM-IV), para los siguientes trastornos:

- Cinco trastornos del ánimo: trastorno depresivo mayor, trastorno bipolar I y II, distimia e hipomanía.
- Cinco trastornos de ansiedad: trastorno de pánico con y sin agorafobia, trastorno de estrés post traumático, fobia social, fobia específica y ansiedad generalizada.
- Siete trastornos de personalidad: evitativo, dependiente, obsesivo-compulsivo, paranoide, esquizoide, histriónico y antisocial.

El enorme tamaño muestral, sin precedentes en este ámbito, permitió estudiar también trastornos infrecuentes.

La clasificación diagnóstica que se utilizó en NESARC, se basó en la entrevista AUDADIS-IV (Alcohol Use Disorder and Associated Disability Interview Schedule–DSM–IV Version), una entrevista semiestructurada, diseñada para el uso por parte de entrevistadores no profesionales. La confiabilidad y validez de este instrumento ha sido

probada en diversos dispositivos de ámbito internacional, tanto en muestras poblacionales como clínicas.

## *4.2 CARACTERISTICAS GENERALES Y OBJETIVO DEL NESARC*

La entrevista longitudinal NESARC consiste en la realización de una primera vuelta o Wave 1, que se llevó a cabo entre los años 2001 y 2002, y una segunda vuelta, o Wave 2 realizada entre 2004 y 2005. La muestra del NESARC representa a la población civil no institucionalizada de los Estados Unidos, incluyendo residentes del distrito de Columbia, Alaska y Hawai. Incluye a gente que vive en viviendas particulares, viviendas militares y en los siguientes ámbitos residenciales: residencias habitacionales, hoteles y moteles no transitorios, albergues, alojamientos de trabajadores, residencias de estudiantes y viviendas de grupo. Todos los participantes del NESARC fueron informados del objetivo y naturaleza de la encuesta, del uso estadístico de los datos, del aspecto voluntario de su participación y de las leyes federales que garantizaban la absoluta confidencialidad de la información. Los ciudadanos que consentían participar después de recibir esta información, fueron entrevistados. El protocolo de investigación, incluyendo el procedimiento de consentimiento informado, fue revisado y aprobado desde el punto de vista ético por el U.S. Census Bureau y el U.S. Office of Management and Budget.

Los datos fueron recogidos cara a cara durante entrevistas llevadas a cabo en los hogares y con la asistencia de ordenadores. La tasa de respuesta en el NESARC fue del 81 %.

Los principales objetivos de la Wave 1 y la Wave 2 del NESARC son:

- Determinar la prevalencia, incidencia, estabilidad y recurrencia de los trastornos por uso de alcohol y las incapacidades asociadas en la población general en EEUU.

- Estimar la magnitud de las disparidades en salud en los trastornos por uso de alcohol y las discapacidades asociadas según los grupos demográficos: género, raza/etnicidad, discapacidad, orientación sexual, edad y estatus socioeconómico.
- Estimar el tamaño, las características y la naturaleza cambiante de las poblaciones de especial interés para esta encuesta, como son, los abusadores de alcohol y otros grupos de población que están afectados por el uso de alcohol, por ejemplo los que realizan consumo de atracón o binge drinking y los que realizan conducción temeraria debido al alcohol.
- Estimar los cambios en los trastornos por uso de alcohol y las discapacidades asociadas a lo largo del tiempo e identificar los factores asociados a la evolución natural de los trastornos por uso de alcohol.
- Determinar el número de personas que reciben tratamiento para el uso de alcohol a través de programas y servicios específicos identificando las posibles barreras al tratamiento existentes.
- Determinar la asociación entre los trastornos por uso de alcohol y sus principales efectos negativos físicos y mentales, diferenciando los trastornos inducidos por sustancias de aquellos que constituyen una entidad de trastorno mental independiente.
- Determinar los límites entre un consumo de alcohol seguro, de uno peligroso, y los patrones de los subtipos de trastornos por uso de alcohol y sus efectos negativos, médicos, sociales y psicológicos asociados.

## *4.3 DISEÑO DEL NESARC*

El Census Supplementary Survey (C2SS) se encargó del marco de encuesta que correspondía a la parte de los hogares (households). De aproximadamente 2,000 C2SS, las

primary sampling units (PSUs), que representaban 3,142 condados y equivalentes a condados en EEUU, 655 PSUs fueron seleccionadas por su tamaño poblacional (de 250,000 o más en 1996), como SR (self-representing). Los restantes PSUs fueron estratificados según características sociodemográficas. Dos de los PSUs fueron seleccionados de cada estrato según una probabilidad proporcional al tamaño, obteniendo 254 PSUs adicionales que fueron identificadas como NSR (non-self-representing). Para evitar una posible revelación de datos, los 401 SR y los 254 NSR resultantes fueron finalmente reducidos a 305 SR y a 130 NSR. De las muestras de PSUs, los hogares fueron seleccionados de manera sistemática y un individuo mayor de 18 años fue elegido al azar en cada uno de ellos para llevar a cabo la entrevista.

El Census 2000 Group Quarters Inventory diseñó el marco de muestra para la parte del NESARC correspondiente a las residencias de grupo. Los individuos fueron seleccionados al azar de la muestra de las residencias grupales en los PSUs.

El NESARC sobremuestreó a los afroamericanos y a los hispanos, aumentando la representación de hogares afroamericanos de 12.3 % al 19.1 %, y la representación de los hogares hispanos del 12.5 % al 19.3 %. Además, NESARC sobremuestreó a los adultos jóvenes de entre 18 y 24 años a razón de 2.25 a 1. De nuevo, un adulto fue seleccionado al azar en cada uno de los hogares.

La muestra del NESARC fue valorada para poder ajustarse a los no respondedores, a la selección de una persona por hogar y a la sobrerrepresentación de afroamericanos, hispanos y jóvenes. Y los datos fueron ajustados para que fueran representativos de toda la población de EEUU para diversas variables sociodemográficas, incluyendo región, edad, sexo, raza y etnia, basándose en el 2000 Decennial Census.

### 4.3.1 Muestra

En la Wave 1 del 2001, la población participante fueron un total de 43.093 ciudadanos civiles, mayores de 18 años, no institucionalizados, residentes en viviendas o residencias de estudiantes o albergues. En la Wave 2 resultaron elegibles un 86,7% de la muestra previa, siendo repreguntadas un total de 34.653 personas. El peso del tamaño muestral fue ajustado para que no supusiera un sesgo la pérdida de ese número de encuestados, por ejemplo por deceso (26-30).

No se hallaron diferencias significativas entre la Wave 1 y la Wave 2 en cuanto a variables sociodemográficas o en cuanto a la presencia de trastorno por uso de sustancias, trastornos afectivos, trastornos de ansiedad o trastornos de personalidad (31).

### 4.3.2 Instrumentos y evaluación

Las variables sociodemográficas incluidas fueron: el sexo, la raza y etnia (blancos, afroamericanos, nativos Americanos, asiáticos e hispanos); lugar de nacimiento: nacidos en EEUU versus nacidos fuera de EEUU; edad, como variable continua; educación: menor que grado de secundaria, grado de secundaria, o estudios superiores; y estado civil: casados o conviviendo en pareja, viudos, separados o divorciados y solteros.

La entrevista diagnóstica fue la Associated Disabilities Interview Schedule –DSM-IV Version (AUDADIS-IV), en la versión de la Wave 2. Esta entrevista estructurada fue aplicada por profesionales entrenados especialmente para ello.

Los trastornos de ansiedad incluidos fueron la fobia social, el trastorno de ansiedad generalizada, el trastorno de pánico, la fobia específica y el síndrome de estrés postraumático (32, 33).

Los **trastornos de personalidad** incluían aquellos incluidos en la Wave 1 (34, 35):

evitativo, dependiente, obsesivo-compulsivo, paranoide, esquizoide, histriónico y antisocial y los incluidos en la Wave 2: borderline, esquizotípico y narcisista, con una confiabilidad test re-test de κ=0.67-0.71 (36). Los trastornos de personalidad raramente son evaluados en las encuestas poblacionales nacionales en EEUU pero recientemente, han resultado ser un importante factor predictivo de búsqueda de tratamiento (37). La evaluación de AUDADIS de los trastornos por uso de alcohol y drogas tienen una confiabilidad test-retest de buena a excelente (κ=0.70-0.91) test-retest reliability (38). La confiabilidad test-retest para los trastornos afectivos y de ansiedad fue de razonablemente buena a buena (κ=0.40-0.77) (26, 33, 38-41).

La AUDADIS-IV investigaba también los criterios DSM-IV para identificar abuso y dependencia de alcohol y drogas para 10 tipos de sustancias (42). Entre los individuos con abuso de drogas, las más comunes fueron: el cannabis (77,8%), cocaína (19,5%) y alucinógenos (15,3%), mientras que entre aquellos con trastorno de dependencia, las sustancias más comunes fueron: cannabis (51,6%), cocaína (35%) y anfetaminas (21,1%).

Los trastornos afectivos incluidos fueron: trastorno depresivo mayor, trastorno bipolar I y II, hipomanía y distimia.

Basándose en los criterios DSM-IV, la fobia social fue diagnosticada ante la presencia de un marcado y persistente temor a una o más situaciones sociales o de actuación en público, en las que el encuestado se expone a personas desconocidas o al escrutinio por parte de los otros. El diagnóstico requería que el encuestado presentara ansiedad casi invariablemente ante la exposición, que el encuestado reconociera su reacción como irracional o exagerada y que presentara evitación de la situación social temida o que se produjera con alto nivel de estrés o ansiedad. La ansiedad generalizada se diagnosticó ante la presencia, la mayoría de los días durante un periodo de al menos 6 meses, de ansiedad y preocupación excesiva e

incontrolable, acompañadas de al menos 3 síntomas de una lista de 6: inquietud, fatiga, disminución de la concentración, irritabilidad, tensión muscular o alteraciones del sueño. El trastorno de pánico fue diagnosticado cuando el encuestado refería periodos inesperados y recurrentes de intenso temor, en los que los síntomas de pánico recogidos en el DSM-IV, alcanzaban un pico de intensidad máximo en los 10 primeros minutos. Los síntomas debían ir acompañados de un miedo persistente a volver a tener nuevos ataques y cambios en la conducta relacionados con la posibilidad de volver a presentar nuevos ataques. La fobia específica fue diagnosticada cuando el encuestado refirió la presencia de un marcado y persistente temor a un objeto o situación específicos. La exposición al objeto o situación conllevaba invariablemente una respuesta inmediata de ansiedad intensa e irracional.

Para cada uno de los diagnósticos de trastornos de ansiedad, además de los criterios específicos mencionados, era necesario que se cumpliera el criterio de significación o relevancia clínica. Quedaban descartados todos aquellos cuadros debidos a efectos físicos de una sustancia o enfermedad médica o que fueran atribuibles a otro trastorno mental.

Los trastornos por uso de drogas de prescripción (PDUD) incluían los trastornos recogidos en el DSM-IV, abuso o dependencia de drogas de prescripción.

Los encuestados fueron catalogados como buscadores de tratamiento si refirieron haber acudido alguna vez a un terapeuta, un médico, un psicólogo o cualquier otro servicio proveedor de asistencia por sus síntomas.

### 4.3.3 Análisis estadístico

Se llevó a cabo un análisis de supervivencia, con el modelo de regresión de Cox de riesgos proporcionales con variables tiempo-dependientes (time-varying covariates), para calcular cuántas personas buscaron tratamiento en el año 1 y en el año 10 desde el inicio de los

síntomas en cada uno de los trastornos a estudio. El seguimiento retrospectivo comenzaba en la edad de inicio de los síntomas y terminaba en la edad que tenía la persona en el momento de la búsqueda inicial de tratamiento.

La probabilidad de búsqueda de tratamiento para cada trastorno fue estudiada separadamente para cada predictor sociodemográfico y diagnóstico, y posteriormente en un único modelo global controlando los potenciales factores de confusión, como el sexo, la raza y etnia, la natividad, la edad, el nivel educativo, el estado civil y cada una de las categorías de eje I y II de trastornos psiquiátricos.

Los trastornos de personalidad fueron codificados como tales a partir de los18 años.

Los resultados se muestran como razón de riesgo ajustada (adjusted hazard ratios AHR) con intervalos de confianza del 95%. Todos los errores estándar y los intervalos de confianza fueron calculados con el programa SUDAAN ((Research Triangle Institute; Research Triangle Park, North Carolina)(43).

# 5 RESULTADOS

## *5.1 Descripción General*

Del total de los 34.653 individuos que formaron parte de la Wave 2 del NESARC, en cuanto a los trastornos de ansiedad, un total de 2.624 individuos cumplían criterios de diagnóstico de trastorno de ansiedad generalizada, 2.367 individuos de fobia social, 2.524 de trastorno de pánico y 5.352 de fobia específica. En cuanto a los trastornos por uso de sustancias, 5.947 cumplían criterios diagnósticos de abuso de alcohol, 4.863 de dependencia al alcohol, 3.228 de abuso de droga y 1.062 de dependencia de drogas. En cuanto a los trastornos por uso de drogas de prescripción 623 individuos cumplían criterios diagnósticos de este trastorno.

## *5.2 Probabilidad de búsqueda de tratamiento*

La probabilidad de acudir a un dispositivo de asistencia en busca de tratamiento varía mucho de un trastorno a otro, y también se observaron diferencias notables en el tiempo que transcurría entre la aparición del trastorno hasta el primer contacto asistencial. Analizamos a continuación los resultados en cada uno de los trastornos a estudio.

### 5.2.1 Trastornos de ansiedad

La tasa más alta de búsqueda de tratamiento en el primer año desde el inicio de los síntomas se encontró en el trastorno de pánico, con una tasa del 53%, es decir, es el trastorno en el que más rápidamente se buscaba tratamiento. Respecto al resto de trastornos de ansiedad, el 38% de personas con trastorno de ansiedad generalizada buscaban tratamiento durante el primer año, solamente el 14% de los que presentaban fobia social y solo el 6% de los que padecían fobia específica acudían a buscar tratamiento durante el primer año desde el inicio del trastorno. En cuanto a la demora de la búsqueda, se vio que aquellos con trastorno de pánico lo hacían en el primer año, aquellos con trastorno de

ansiedad generalizada tardaban en torno al año, aquellos con fobia específica tardaban 13 años y aquellos con fobia social tardaban 16 años en buscar tratamiento.

**Figura 2. Tasa de probabilidad acumulada de búsqueda de tratamiento en los trastornos de ansiedad**

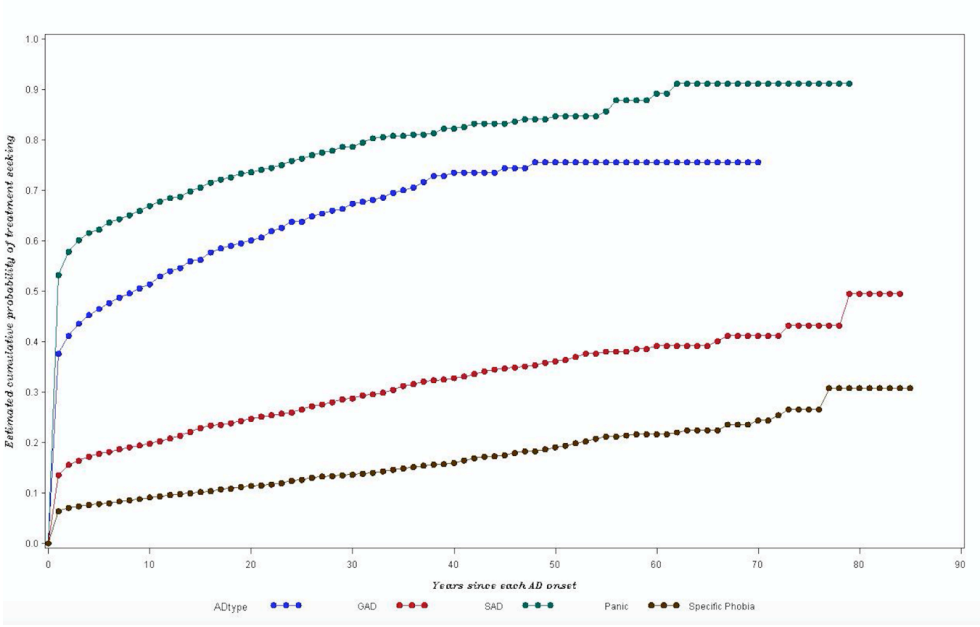
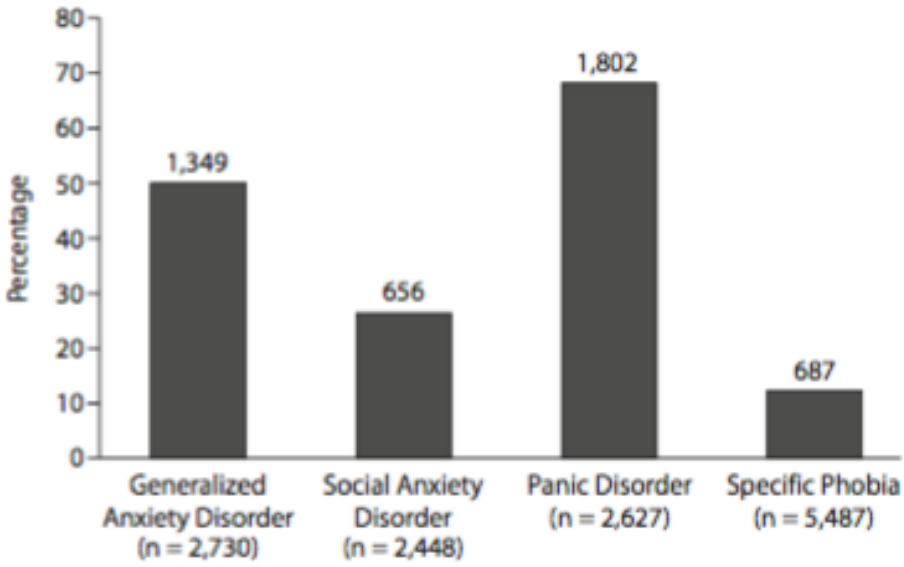



**Figura 3. Porcentaje de individuos con trastornos de ansiedad que habían buscado tratamiento en el momento de la entrevista**



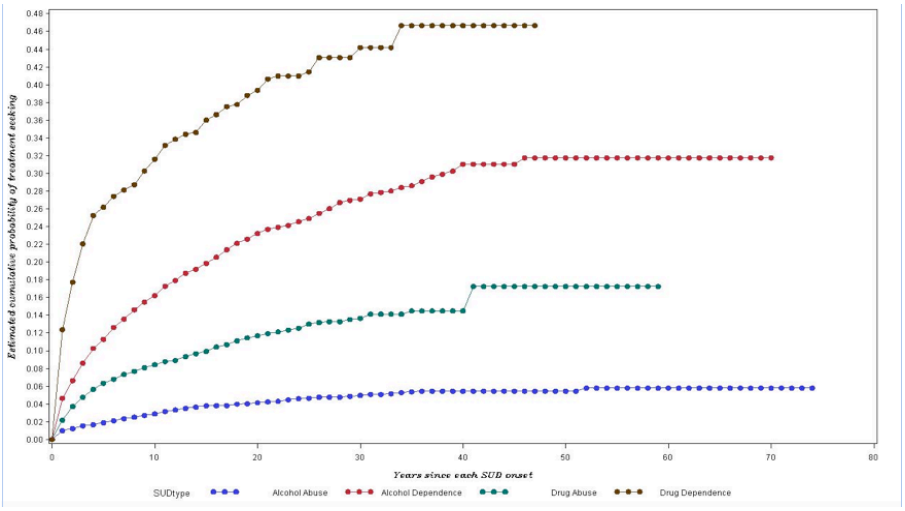
### 5.2.2 Trastornos por uso de sustancias

La probabilidad de acudir a tratamiento a lo largo de la vida por presentar dependencia de drogas fue la más alta de este grupo, obteniendo un resultado del 90%, seguido del abuso de drogas, con una tasa del 60%. En el caso de la dependencia al alcohol se obtuvo una tasa del 54%. Finalmente, la tasa más baja de búsqueda de tratamiento a lo largo de la vida, resultó ser para los individuos con abuso de alcohol, con una tasa del 16%.

Después de un año desde el establecimiento del trastorno, la tasa de búsqueda de tratamiento para los sujetos con dependencia de drogas, fue de un 13%, para los que presentaban dependencia de alcohol, fue de un 5%, para los individuos con abuso de drogas, fue de un 2% y para aquellos con abuso de alcohol, se obtuvo la tasa más baja, un 1%.

A los 10 años también se encontró que aquellos con dependencia de drogas eran los que tenían más probabilidades de acudir a tratamiento con un 43% de probabilidad; un 19% para aquellos con dependencia de alcohol, un 14% para aquellos con abuso de drogas y un 5% para los que presentaban abuso de alcohol.

**Figura 4. Tasa de probabilidad acumulada de búsqueda de tratamiento en los trastornos por uso de sustancias**

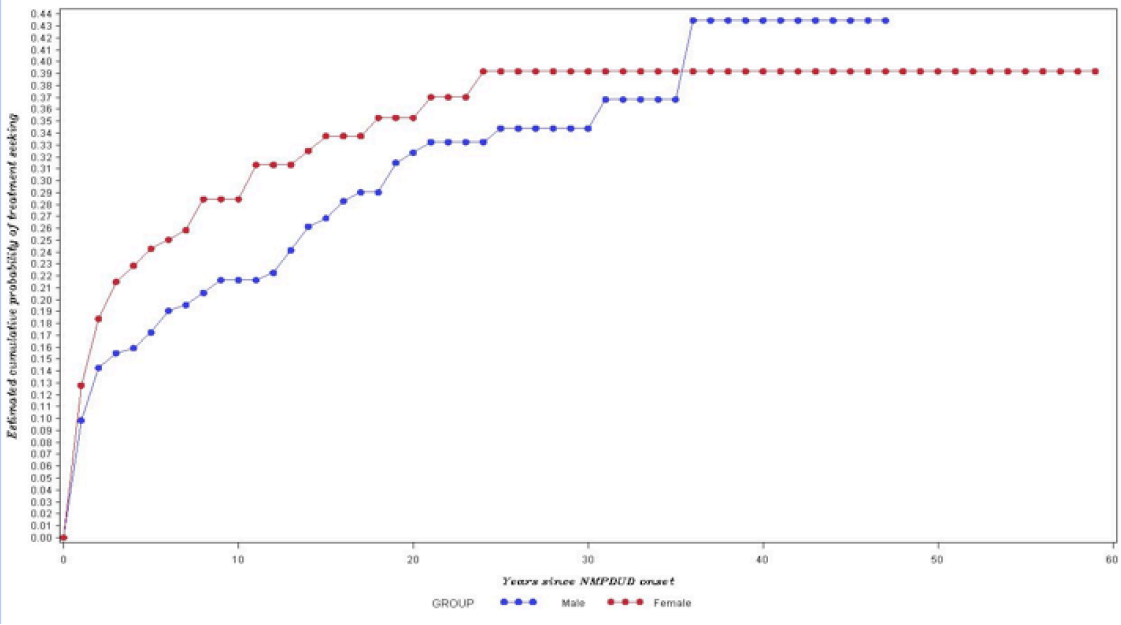


### 5.2.3 Trastornos por uso de drogas de prescripción

Entre los sujetos con trastorno por uso de drogas de prescripción, la probabilidad de acudir a tratamiento a lo largo de la vida fue del 42,4%.

La tasa de búsqueda de tratamiento en el primer año fue de 11,1%, y de 24,5% en los 10 años desde inicio del trastorno

**Figura 5. Tasa de probabilidad acumulada de búsqueda de tratamiento en los trastornos por uso de drogas de prescripción**




## 5.3 Predictores sociodemográficos de búsqueda de tratamiento

En cuanto a los factores demográficos que influyen positiva o negativamente en la búsqueda de tratamiento, también se encontraron diferencias significativas. A continuación, se muestran los resultados ajustados por covariables: sexo, raza, lugar de nacimiento y edad de inicio del trastorno.

### 5.3.1 Trastornos de ansiedad

Entre los trastornos de ansiedad, se encontró que el género femenino era un predictor positivo en trastorno de ansiedad generalizada (HR: 0,69; CI 0.55-0.86), no así en el resto de trastornos de ansiedad, en los que no se encontró una diferencia significativa según sexo o raza.

Un debut más tardío de los trastornos resultó ser también un predictor positivo en todos los trastornos de ansiedad, frente a una edad de inicio menor (HR: 0.23 CI: 0.17- 0.31 en el trastorno de ansiedad generalizada) (HR: 0.20 CI: 0.15- 0.27 en la fobia social) (HR: 0.19 CI: 0.15-0.24 en el trastorno de pánico) (HR: 0.21, CI:0.16-0.27 en la fobia específica). En cuanto al nivel educativo, la tasa de búsqueda de tratamiento resultó ser significativamente mayor en aquellos con más años de formación, excepto en el caso del trastorno de pánico, que no había diferencias significativas.

El estado civil resultó ser un factor importante, encontrándose que los divorciados, separados y viudos tenían significativamente menores tasas de tratamiento para el trastorno de ansiedad generalizada (HR: 0.78 CI: 0.63-0.97), mientras que los sujetos casados acudían más a tratamiento en el caso de presentar fobia social (HR:1.54 CI:1.17-2.03), pero menos en el caso de presentar trastorno de pánico (HR: 0.82 CI: 0.68-0.99). Los sujetos que habían sufrido un cambio reciente en su estado civil eran más proclives a buscar tratamiento en todos los trastornos de ansiedad (HR:1.35 CI 1.15- 1.58 en el trastorno de ansiedad generalizada), (HR: 1.24 CI: 1.02- 1.50 en la fobia social), (HR: 1.21 CI: 1.06-1.39 en el trastorno de pánico) (HR: 1.64 CI: 1.30-2.06 en la fobia específica).

Finalmente, en cuanto a los antecedentes de tratamiento previo, se vio que haber recibido un tratamiento en el pasado por trastorno del ánimo, trastorno de ansiedad y trastorno por déficit de atención, aumentaba las probabilidades de buscar tratamiento en todos los trastornos de ansiedad.

### 5.3.2 Trastorno por uso de sustancias

El género masculino se asoció a una mayor probabilidad de búsqueda de tratamiento en caso de abuso de alcohol (HR: 1.73 CI: 1.23-2.42), pero no en el caso de dependencia al alcohol. Resultó ser un predictor negativo en la búesqueda de tratamiento por abuso de drogas (HR: 0.69 CI: 0.52- 0.91).

Una edad de inicio tardía aumentaba las probabilidades de búsqueda de tratamiento en la dependencia de alcohol y abuso de alcohol (HR: 1.06 CI: 1.04-1.07 en el abuso de alcohol y HR: 1.05 CI: 1.03-1.06); También resultaron predictores positivos de búsqueda el estado civil soltero (HR: 2.10 CI: 1.40- 3.16 en abuso de alcohol y HR: 1.39 CI: 1.12- 1.72 en dependencia de alcohol en personas separadas, divorciadas o enviudadas; y HR: 2.98 CI: 2.13-4.17 en abuso de alcohol y HR: 1.57 CI: 1.25- 1.97 en dependencia de alcohol en personas nunca casadas).

Los cambios recientes en el estado civil entorpecían la búsqueda de tratamiento por abuso de alcohol (HR: 0.58 CI: 0.34-0.97).

Los que pertenecían a una cohorte de menor edad buscaban más tratamiento por trastorno de abuso, tanto alcohol como drogas, sin embargo no había diferencias significativas en cuanto a la cohorte en el caso de las dependencias.

Haber recibido previamente tratamiento por un trastorno por uso de sustancias resultó ser un predictor positivo para todos los trastornos por uso de sustancias, mientras que haber recibido tratamiento previo para otro trastonro mental aumentaba las posibilidades de buscar tratamiento para el abuso de alcohol y para la dependencia de drogas.

### 5.3.3 Trastorno por uso de drogas de prescripción

Las variables demográficas que resultaron ser predictores positivos de búsqueda de tratamiento fueron: ser de raza asiática (HR: 5.22 CI: 1.67-16.27) y una edad de inicio temprana (HR: 1.10 CI: 1.06-1.14).

## *5.4 Predictores clínicos de búsqueda de tratamiento*

También se vio que la comorbilidad con distintas patologías psiquiátricas del eje I y del eje II afectaba de una u otra manera a la búsqueda de tratamiento de los trastornos a estudio. A continuación se muestran los resultados ajustados por covariables: sexo, raza, lugar de nacimiento (44) y edad de inicio del trastorno.

### 5.4.1 Trastornos de ansiedad

Entre los trastornos de personalidad, se vio que el trastorno evitativo de la personalidad hacía menos probable la búsqueda de tratamiento para el trastorno de pánico (HR: 0.77 CI: 0.62-0.97), mientras que los que presentaban un trastorno obsesivo-compulsivo de la personalidad eran menos proclives significativamente a buscar tratamiento para fobia específica (HR:0.72 CI: 0.53 0.98). Los sujetos con trastorno paranoide de la personalidad tenían menos probabilidades de buscar tratamiento para trastorno de ansiedad generalizada (HR: 0.79 CI: 0.64-0.97), mientras que los que tenían un trastorno esquizoide de la personalidad buscaban tratamiento para la fobia social con menos probabilidad (HR: 0.67 CI: 0.49-0.92). Por ultimo, la coexistencia con un trastorno antisocial de la personalidad se relacionaba con menos probabilidad de acudir a tratamiento por trastorno de ansiedad generalizada (HR: 0.67 CI: 0.49- 0.92)**.** Entre los trastornos comórbidos del eje I, se vio que la coexistencia del trastorno bipolar aumentaba la probabilidad de búsqueda de tratamiento para el trastorno de ansiedad generalizada (HR: 1.23 CI: 1.02-1.49). Entre los propios trastornos de ansiedad también se hallaron datos significativos. Así, la comorbilidad con trastorno de ansiedad generalizada aumentaba las tasas de tratamiento de aquellos con fobia social (HR: 1.71 CI: 1.37- 2.14)

y fobia específica (HR: 1.69 CI: 1.32-2.18); el trastorno de pánico aumentaba la tasa de tratamiento de todo el resto de trastornos de ansiedad.

### 5.4.2 Trastornos por uso de sustancias

En cuanto los trastornos de personalidad y la influencia que ejercían en el comportamiento de búsqueda de tratamiento en los trastornos por uso de sustancias, se halló que el trastorno dependiente de la personalidad aumentaba la probabilidad de tratamiento por dependencia de alcohol (HR: 1.90 CI:1.09-3.33) ; el trastorno esquizoide de la personalidad aumentaba la probabilidad de tratamiento por abuso de drogas (HR:1.95 CI:1.20- 3.16) y el trastorno evitativo la de dependencia de drogas (HR:1.59 CI:1.01- 2.52); el trastorno narcisista de la personalidad disminuía la probabilidad de tratamiento por abuso de alcohol (HR: 0.51 CI: 0.29- 0.90) y el trastorno antisocial disminuía la probabilidad de tratamiento por dependencia de drogas (HR: 0.50 CI: 0.35-0.72)**.**

En cuanto a los trastornos del eje I, se vio que el abuso de alcohol entorpecía el tratamiento para el abuso de drogas (HR: 0.51 CI: 0.31-0.84), mientras que la dependencia al alcohol disminuía la probabilidad de tratamiento tanto para el abuso (HR: 0.62 CI: 0.47-0.82) como para la dependencia a drogas (HR: 0.59 CI: 0.45 0.77). La comorbilidad con la distimia favorecía la búsqueda de tratamiento por dependencia al alcohol (HR:1.51 CI:1.02-2.25) y abuso de drogas (HR: 2.74 CI: 1.50-4.99); la depresión aumentaba la probabilidad de tratamiento por abuso de alcohol (HR: 1.67 CI: 1.06-2.64); el trastorno bipolar favorecía el tratamiento de los trastornos por uso de alcohol, tanto el abuso (HR: 3.95 CI:2.26-6.92) como la dependencia (HR: 1.45 CI: 1.09-1.94). La fobia específica se asoció a menores tasas de tratamiento por abuso de alcohol (HR: 0.48 CI: 0.25-0.93) y el juego patológico se asoció a una menor tasa de tratamiento por abuso de drogas, mientras que el trastorno por estrés postraumático comórbido aumentaba la probabilidad de tratamiento por dependencia de alcohol (HR: 1.43 CI:1.05- 1.96).

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### 5.4.3 Trastornos por uso de drogas de prescripción

En cuanto a la comorbilidad con otros trastornos se descubrieron como factores predictores de tratamiento de trastorno por uso de drogas de prescripción: el trastorno depresivo mayor (HR: 2.24 CI:1.29-3.90), el trastorno bipolar (HR: 2.59 CI: 1.44-4.67), la fobia específica (HR:1.84 CI:1.06-3.20) y los trastornos de personalidad Cluster B (HR:1.76 CI: 1.04-3.00).

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# 6 DISCUSIÓN

## *6.1 Contraste de hipótesis*

### 6.1.1 La tasa de tratamiento es baja

En concordancia con los trabajos previos, en nuestro estudio se demostró que la tasa de búsqueda de tratamiento en los trastornos psiquiátricos es baja, y además la demora existente hasta el momento de búsqueda de tratamiento es alta.

#### 6.1.1.1 Trastornos de ansiedad

Tal y como hemos comentado en los resultados, en los trastornos de ansiedad se observa gran variabilidad de uno a otro trastorno en cuanto al comportamiento de búsqueda de tratamiento. Así, los sujetos con trastorno de pánico se demoran menos de un año en buscar tratamiento, mientras que en el extremo opuesto, los sujetos con fobia social se demoran 16 años. Este dato está íntimamente relacionado con la sensación de urgencia y de necesidad de tratamiento por las características de los síntomas panicosos: taquicardia, dolor precordial y falta de aliento, que hacen que el individuo busque tratamiento en dispositivos médicos o psiquiátricos sin dilación, aunque el trastorno de ansiedad asociado a una peor calidad de vida es el trastorno de ansiedad generalizada (45). Igualmente, es importante destacar una vez más, la baja tasa de tratamiento en la fobia social, ya que a pesar de las consecuencias negativas que este trastorno ocasiona a quien lo padece, probablemente se sigue percibiendo como un rasgo invariable de la personalidad, en lugar de como un trastorno tratable y modificable. En este sentido, habría que hacer un esfuerzo para mejorar el acceso a tratamiento de estas personas, que por la propia naturaleza del trastorno, a veces están en situación de confinamiento o aislamiento social y tienen dificultad para llegar al dispositivo asistencial. A la luz de estos resultados, parece evidenciarse que a la hora de que un individuo se movilice para buscar tratamiento es más

importante la sensación subjetiva de necesidad que tenga el propio sujeto que la gravedad objetiva que pueda determinar un profesional o la comunidad sanitaria (17). Esto indica una discordancia entre los dos ámbitos y sugiere la necesidad de aunar criterios de tratamiento entre la población y los sanitarios, mediante campañas de divulgación de la información y de posibilidades de tratamiento.

#### 6.1.1.2 Trastonos por uso de drogas de prescripción

En el caso de los trastornos por uso de drogas de prescripción, la tasa de tratamiento es especialmente baja, ya que solo el 42 % de los individuos buscarán eventualmente ayuda para tratar el trastorno a lo largo de su vida, lo que supone un porcentaje menor que otros trastornos mentales, incluidos los trastornos por uso de sustancias, que también era más baja que en otros trastornos mentales, según advirtieron ya algunos estudios basados en otra encuesta poblacional, la National Comorbidity Survey (13, 17). Los motivos de la baja tasa de tratamiento en los trastornos por uso de sustancias pueden ser: la percepción por parte del sujeto de que no se necesita tratamiento (15), la duda respecto a la eficacia del tratamiento (15, 17), posiblemente el propio efecto recompensa que tienen las sustancias y por último, una baja percepción de las consecuencias negativas a largo plazo, que dificultan el abandono de su consumo. El motivo por el que en el caso de los trastorno por uso de drogas de prescripción es una tasa especialmente baja, puede ser porque al ser sustancias legales puede que se perciban como menos peligrosas que las sustancias ilegales. Un dato también llamativo e importante, es que si bien la tasa de tratamiento a lo largo de la vida es baja, el tiempo de demora desde el inicio del trastorno es de 3,89 años, más bajo que en otros trastornos, y esto puede ser porque son sujetos que ya están dentro del sistema asistencial, lo que facilita tanto la detección del abuso por parte del médico, como la solicitud espontánea de ayuda por parte del paciente. Teniendo en cuenta que la prescripción de opiáceos en las consultas médicas ha aumentado de un 0,65% en 1995-

1998 a un 2,63% en 2007-2010 en EEUU (30), es de especial relevancia que se adopten las medidas necesarias para mejorar la detección de casos que realizan un uso inadecuado de opiáceos, mediante revisiones periódicas, y el acceso al tratamiento. Además, el aumento de casos de muerte por abuso de opiáceos (46) indica que es necesario realizar en las consultas médicas una labor de psicoeducación a los pacientes y familiares y advertirles de los riesgos que entraña el uso inadecuado de estos fármacos.

#### 6.1.1.3 Tastornos por uso de sustancias

Un hallazgo interesante del presente estudio en relación a la búsqueda de tratamiento por trastorno de uso de sustancias es que el comportamiento en este sentido varía notablemente según el subgrupo. Así, encontramos que los casos más graves acudían más a tratamiento. Los casos con dependencia a drogas tienen un 90% de probabilidades de acudir a tratamiento a lo largo de la vida, seguidos de los casos de abuso de drogas, posteriormente los casos de dependencia al alcohol y por último los casos de abuso de alcohol, que son los que tienen la tasa más baja de búsqueda de tratamiento del grupo (16%) como ya mencionamos en el apartado de resultados. Este resultado está relacionado con el grado de impacto que el trastorno tiene en la calidad de vida del sujeto y en su funcionamiento (42, 47, 48). Igualmente, los síntomas de abstinencia inherentes a la dependencia hacen que el individuo sienta mayor necesidad de solicitar ayuda o tratamiento. Además es posible que los sujetos con dependencia a drogas experimenten más presión social para buscar tratamiento desde ámbitos diversos como el familiar o el judicial.

### 6.1.2 Factores demográficos como predictores de búsqueda de tratamiento

Según los datos de nuestro estudio, respecto a la influencia que tiene el género en el comportamiento de búsqueda de tratamiento, las mujeres buscan tratamiento con más frecuencia que los hombres en caso de padecer trastorno de ansiedad generalizada, y los hombres buscan más tratamiento que las mujeres en caso de padecer trastorno por abuso de

alcohol. En todo el resto de trastornos a estudio, las diferencias encontradas en cuanto a género y búsqueda de tratamiento no fueron estadísticamente significativas. En contra de lo que se afirma en la literatura previa (17, 37).

La edad de inicio del trastorno resultó ser un importante predictor de tratamiento, ya que un debut tardío favorecía la búsqueda de tratamiento en todos los trastornos de ansiedad y también en el abuso y dependencia de alcohol. Este dato está en probable relación con el hecho de que los sujetos más jóvenes dependen de que sean las personas a cargo quienes tengan que detectar la existencia del trastorno, y esto con frecuencia es una barrera importante. Tal y como mencionábamos en el apartado de resultados, la edad de inicio temprana aumentaba, sin embargo, las probabilidades de tratamiento en los casos de trastornos por uso de drogas de prescripción presumiblemente porque los sujetos ya forman parte del sistema y están ya en contacto con los profesionales que les prescriben los fármacos, y por eso no dependen tanto de los padres o tutores para detectar los síntomas.

El nivel educativo también es un factor destacable. A mayor nivel educativo, mayor probabilidad de buscar tratamiento. Esto ocurrió así en todos los trastornos de ansiedad excepto en el trastorno de pánico, probablemente porque el grado de impacto del trastorno es tan importante que la formación no resulta un factor determinante, y acuden a tratamiento la gran mayoría de los individuos que lo padecen independientemente de su nivel educativo. Un hallazgo curioso respecto al nivel educativo como predictor, fue que en el caso de algunos trastornos por uso de sustancias (dependencia de alcohol y abuso de alcohol) justamente resultó ser un predictor negativo, es decir que tenían más probabilidades de ir a buscar tratamiento aquellos con nivel educativo más bajo. Este dato es congruente con lo hallado por el equipo de Cook y colaboradores (49) según el cual los individuos más desfavorecidos socialmente tenían más probabilidad de acudir a buscar tratamiento por cualquier trastorno por uso de sustancias. Esto puede ser debido a que son

más susceptibles de recibir presiones del entorno, familiar, social o judicial, que aquellos pares que tienen un mayor grado educativo, ya que éstos serían más autónomos e independientes y en última instancia, los únicos responsables de decidir si acuden o no a tratamiento.

Respecto a la influencia que el estado civil pueda tener en el comportamiento de búsqueda de tratamiento, encontramos, tal y como se ha reflejado en los resultados, que los sujetos separados, divorciados o viudos buscaban con más probabilidad tratamiento para abuso y dependencia de alcohol. Los casados buscaban tratamiento con más frecuencia para fobia social. Y los que habían tenido un cambio reciente en su estado civil fueron más proclives a buscar tratamiento para cualquiera de los trastornos de ansiedad, pero lo fueron menos a buscar ayuda por abuso de alcohol. Los cambios recientes en el estado civil, entendiéndose como conflictos relacionales, pueden responder a una mayor percepción de la necesidad de resolución de problemas en ese ámbito mediante la búsqueda de tratamiento.

Por último, haber recibido previamente tratamiento para otra patología aumenta las probabilidades de volver a solicitarlo, lo que indica que el sujeto ya ha superado en el tratamiento anterior algunos de los obstáculos comunes, como desinformación o miedo al estigma o la ineficacia de los tratamientos. Una importante excepción en este sentido fue que un tratamiento previo para trastorno por uso de sustancias no aumentaba la probabilidad de búsqueda para otros trastornos. Esto es debido a la red paralela y separada de asistencia en trastornos por uso de sustancias, e indica la necesidad de plantear la integración de ambos circuitos asistenciales. (50-52).

### 6.1.3 Factores clínicos (comorbilidad) como predictores de búsqueda de tratamiento

Los hallazgos en este apartado son esperables y acordes a la literatura previa. En el caso de los trastornos de ansiedad, la coexistencia con algunos trastornos de personalidad como el paranoide, antisocial, esquizoide u obsesivo-compulsivo estaba relacionado con mayor

demora al tratamiento, estando este resultado en consonancia con lo que ocurre en el trastorno depresivo mayor cuando coexiste con estos trastornos de personalidad (37). Las dificultades interpersonales que presentan los individuos con estos rasgos de personalidad, profundamente desadaptativos, interfieren de manera clara en la búsqueda de tratamiento, ya sea por la reticencia que pueden tener a la hora de entablar una relación terapéutica, o bien porque suelen carecer del apoyo social que favorece o facilita el tratamiento, a través del mero acompañamiento, por ejemplo. Este resultado indica que la gravedad de la situación no siempre conlleva una mayor probabilidad de búsqueda de tratamiento, al menos para los trastornos internalizantes, como los trastornos de ansiedad, y más bien ocurre al contrario. Sin embargo, en el caso de la fobia social se vio que acudían más a tratamiento si además existía un diagnóstico de trastorno evitativo o esquizoide de la personalidad, como si se tratara de grados de gravedad de un mismo trastorno (53), y en este caso sí hubiera una mayor percepción de necesidad de tratamiento.

La coexistencia con cualquier otro trastorno de ansiedad aumentaba las probabilidades de tratamiento para los demás, esto es muy claro en el caso del trastorno de pánico, ya que los síntomas panicosos, de carácter más agudo, interfieren con frecuencia con la actividad habitual de los individuos y conduce a una mayor tasa de búsqueda de tratamiento (54).

El efecto de los trastornos comórbidos en la búsqueda de tratamiento para los trastornos por uso de sustancias, era menor que en el caso de los trastornos afectivos (37) o en los trastornos de ansiedad, aunque sí se vio que la coexistencia de un trastorno bipolar aumentaba las probabilidades de tratamiento por trastornos relacionados con el uso del alcohol, dándose conjuntamente con frecuencia (55, 56). En general, parece que en los trastornos por uso de sustancias los factores más determinantes de búsqueda de tratamiento están más relacionados con las circunstancias externas que con la motivación interna. Los trastornos que disminuían las probabilidades de tratamiento fueron la fobia específica y los

trastornos narcisista y antisocial de la personalidad, variando su efecto según se tratara de alcohol o drogas.

En cuanto a los trastornos psiquiátricos que en coexistencia comórbida modifican el comportamiento de búsqueda de tratamiento para los trastornos por uso de drogas de prescripción, los trastornos de personalidad cluster B, aumentan la probabilidad de tratamiento. Este dato puede estar relacionado con el carácter extrovertido y externalizador de los rasgos histriónicos o limítrofes de la personalidad. De este grupo, la excepción es el trastorno narcisista de la personalidad que supone un freno a la hora de buscar tratamiento, probablemente porque lo juzgan ineficaz de antemano.

Entre los trastornos del humor, mencionar que el trastorno bipolar y el trastorno depresivo aumentan la probabilidad también de búsqueda de tratamiento, igual que los trastornos de ansiedad, especialmente el trastorno de pánico. Curiosamente la fobia específica resultó un favorecedor de búsqueda de tratamiento, este hallazgo coincide con un dato ya publicado y basado en la World Mental health Survey que señala la fobia específica como predictor de ulteriores trastornos internalizantes, así que podría constituir un marcador temprano a tener en cuenta (57).

## *6.2 Relevancia*

Las consecuencias de que los trastornos mentales permanezcan sin tratamiento son muy negativas. La persistencia de los síntomas supone una merma importante en la calidad de vida de los individuos y tiene un impacto económico importante en el conjunto de la sociedad, por eso es necesario identificar las barreras que existen para acceder a un tratamiento adecuado y de calidad.

Una de las fortalezas importantes de este estudio fue el tamaño de la muestra, que permite afianzar los resultados obtenidos.

En la sociedad norteamericana actual, en constante cambio demográfico, es muy importante conocer qué parte de la población está siendo adecuadamente tratada. El rigor de los datos y el tamaño muestral suponen una guía útil y apoyo para diseñar programas y políticas de atención sanitaria adecuados.

## *6.3 Limitaciones*

Una limitación importante relacionada con el diseño del estudio y de la propia encuesta NESARC a la hora de analizar datos de acceso a tratamiento, fue que la información acerca de la cobertura de seguro médico, los ingresos económicos o la localización geográfica de los sujetos cada año, no estaba disponible.

Otra limitación es que cualquier pregunta acerca de la asistencia recibida y que tiene que ser referida por los sujetos, puede estar falseada o minimizada por miedo al estigma. Y por último, el momento de inicio del trastorno y el momento del primer tratamiento recibido, puede que hayan ocurrido en un momento diferente al referido por el sujeto.

En el caso de las drogas no se especificó el comportamiento según los diferentes tipos de drogas, y esto podría ser una fuente de información relevante.

## *6.4 Futura Investigación*

La tercera vuelta, Wave 3 ya ha sido llevada a cabo, entre los años 2012 y 2013 en un total de 36.309 individuos. Sería recomendable analizar los datos de búsqueda de tratamiento correspondientes a este nuevo periodo y compararlos con los datos existentes para determinar si el acceso a tratamiento está en proceso de mejora. Y aún más adelante, con datos obtenidos en el periodo de aplicación de la ley de Obama, se podría determinar si es una medida eficaz en este ámbito. Sería necesario monitorizar en los próximos años la incidencia que puedan tener las nuevas políticas que vaya introduciendo el presidente Trump.

# 7 CONCLUSIONES

1. El trastorno con la tasa de búsqueda de tratamiento más alta fue el trastorno de pánico. El trastorno con menor tasa de búsqueda de tratamiento fue la fobia específica.

2. Los que menos tiempo tardaban en buscar tratamiento fueron los individuos con trastorno de pánico, menos de 1 año; los que más, los que tenían fobia social, 16 años.

3. Los predictores positivos de búsqueda de tratamiento en los trastornos de ansiedad fueron: ser joven, un cambio reciente del estado civil, haber sido previamente tratado por un trastorno psiquiátrico diferente al abuso de sustancias y tener otro trastorno de ansiedad comórbido. Ser mujer solo resultó ser un predictor positivo en el caso de la ansiedad generalizada.

4. Los individuos con trastornos de personalidad paranoide, antisocial, obsesivo-compulsivo o esquizoide tardaban más en buscar tratamiento para la ansiedad generalizada, fobia social, trastorno de pánico y fobia específica. El trastorno de personalidad evitativo o esquizoide aumentaban las probabilidades de búsqueda de tratamiento para la fobia social, aunque no para el resto de trastornos de ansiedad.

5. La presencia de otro trastorno de ansiedad aumentaba las probabilidades de búsqueda de tratamiento para el resto de los trastornos de ansiedad.

6. En los trastornos por uso de sustancias, la tasa más alta de tratamiento se halló en los trastornos de dependencia de drogas, y la menor, se halló en los casos de abuso de alcohol.

7. Un tratamiento previo para cualquier trastorno por uso de sustancias aumentaba la probabilidad de tratamiento para un ulterior trastorno por uso de sustancias.
8. Una edad de inicio del trastorno tardía y un grado de formación menor, aumentaban las posibilidades de búsqueda de tratamiento para el abuso y la dependencia de alcohol.
9. En el caso de los trastornos por uso de drogas de prescripción, se halló que solamente el 42% de los afectados buscaban tratamiento, en un tiempo medio de 3,83 años desde el inicio del trastorno.
10. Debido a la baja tasa de tratamiento, el gasto global en concepto de disminución de la productividad y gastos asistenciales es muy alto.
11. Los profesionales han de estar informados y entrenados en detectar con prontitud trastornos psiquiátricos en sus dispositivos asistenciales para minimizar las consecuencias negativas de un trastorno no tratado.
12. Es urgente ampliar la cobertura sanitaria para los individuos que tienen un difícil acceso al tratamiento y minimizar así las consecuencias negativas que se derivan de un trastorno no tratado.

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**Tabla 2. Effects of sociodemographic variables on treatment contact in individuals with selected DSM-IV anxiety disorders in the United States.**

| Variable | Generalized Anxiety Disorder (N=2624) | | | Social Anxiety Disorder (N=2392) | | | Panic Disorder (N=2605) | | | Specific Phobia (N=5396) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Adj HR | 95% CI | | Adj HR | 95% CI | | Adj HR | 95% CI | | Adj HR | 95% CI | |
| **Sex** | | | | | | | | | | | | |
| Male | **0.69** | **0.55** | **0.86** | 0.78 | 0.66 | 0.93 | 1.08 | 0.90 | 1.30 | 0.93 | 0.72 | 1.20 |
| Female | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| **Race/ethnicity** | | | | | | | | | | | | |
| White | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Blacks | 0.87 | 0.66 | 1.15 | 0.84 | 0.68 | 1.04 | 0.87 | 0.68 | 1.12 | 0.72 | 0.51 | 1.00 |
| Native Americans | 1.08 | 0.61 | 1.90 | 1.01 | 0.71 | 1.45 | 0.94 | 0.64 | 1.38 | 1.12 | 0.67 | 1.87 |
| Asians | 0.93 | 0.36 | 2.37 | 1.13 | 0.55 | 2.29 | 0.88 | 0.54 | 1.43 | 1.25 | 0.51 | 3.06 |
| Hispanic | 0.88 | 0.69 | 1.12 | 0.82 | 0.66 | 1.03 | 1.11 | 0.87 | 1.41 | 1.04 | 0.74 | 1.46 |
| **Nativity** | | | | | | | | | | | | |
| US Born | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Foreign Born | 1.24 | 0.93 | 1.65 | 1.01 | 0.70 | 1.45 | 0.77 | 0.57 | 1.04 | 0.71 | 0.49 | 1.02 |
| **Early age of onset (age 21 or less)** | **0.23** | **0.17** | **0.31** | **0.20** | **0.15** | **0.27** | **0.19** | **0.15** | **0.24** | **0.21** | **0.16** | **0.27** |
| **Educational Years** | | | | | | | | | | | | |
| 0-11 | **0.71** | **0.52** | **0.97** | 0.75 | 0.52 | 1.07 | 0.99 | 0.73 | 1.34 | **0.68** | **0.47** | **0.98** |
| 12 | **0.79** | **0.62** | **0.99** | **0.72** | **0.53** | **0.96** | 1.04 | 0.82 | 1.32 | **0.60** | **0.44** | **0.81** |
| 13-15 | 0.93 | 0.77 | 1.13 | **0.61** | **0.45** | **0.83** | 0.98 | 0.79 | 1.22 | **0.65** | **0.50** | **0.84** |
| > 16 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| **Marital Status** | | | | | | | | | | | | |
| Married/living with someone as if married | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Widowed/separated/divorced | **0.78** | **0.63** | **0.97** | 0.98 | 0.73 | 1.33 | 0.98 | 0.82 | 1.17 | 0.81 | 0.63 | 1.05 |
| Never married | 0.91 | 0.75 | 1.10 | **1.54** | **1.17** | **2.03** | **0.82** | **0.68** | **0.99** | 0.82 | 0.61 | 1.09 |
| **Marital transition (any change in marital status)** | **1.35** | **1.15** | **1.58** | **1.24** | **1.02** | **1.50** | **1.21** | **1.06** | **1.39** | **1.64** | **1.30** | **2.06** |
| **Past substance use treatment*** | 1.03 | 0.77 | 1.37 | 0.98 | 0.73 | 1.31 | 1.09 | 0.85 | 1.38 | 1.12 | 0.84 | 1.51 |
| **Past mental health treatment**** | **3.95** | **3.27** | **4.78** | **7.04** | **5.24** | **9.46** | **2.46** | **2.07** | **2.93** | **4.48** | **3.36** | **5.97** |

*switching on the first year of treatment. Including AUD and DUD ** Including mood disorder, anxiety disorder.

**Tabla 3. Effects of comorbidity on treatment contact in individuals with each anxiety disorder.**

| | Generalized Anxiety Disorder (N=2624) | | | Social Anxiety Disorder (N=2367) | | | Panic Disorder (N=2524) | | | Specific Phobia (N=5352) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Adj HR** | **95% CI** | | **Adj HR** | **95% CI** | | **Adj HR** | **95% CI** | | **Adj HR** | **95% CI** | |
| **Any alcohol use disorder** | 1.13 | 0.94 | 1.36 | 1.11 | 0.85 | 1.45 | 1.08 | 0.91 | 1.28 | 1.17 | 0.84 | 1.62 |
| **Any drug use disorder** | 1.13 | 0.88 | 1.45 | 0.88 | 0.64 | 1.21 | 0.84 | 0.65 | 1.07 | 1.20 | 0.76 | 1.90 |
| **Nicotine Dependence** | 0.94 | 0.78 | 1.12 | 1.02 | 0.79 | 1.32 | 0.97 | 0.84 | 1.12 | 0.81 | 0.60 | 1.08 |
| **Mood Disorders** | | | | | | | | | | | | |
| Dysthymia | 0.92 | 0.75 | 1.13 | 1.30 | 0.92 | 1.83 | 1.09 | 0.90 | 1.33 | 1.43 | 0.90 | 2.28 |
| MDD | 1.03 | 0.88 | 1.22 | 1.10 | 0.84 | 1.43 | 0.95 | 0.82 | 1.11 | 0.83 | 0.65 | 1.07 |
| Bipolar Disorder | **1.23** | **1.02** | **1.49** | 1.21 | 0.92 | 1.59 | 1.10 | 0.94 | 1.30 | **1.43** | **1.07** | **1.92** |
| **Any anxiety disorder *** | | | | | | | | | | | | |
| Generalized anxiety disorder | | | | **1.71** | **1.37** | **2.14** | 1.06 | 0.92 | 1.23 | **1.69** | **1.32** | **2.18** |
| Social anxiety disorder | 1.13 | 0.95 | 1.33 | | | | 1.06 | 0.92 | 1.23 | **1.40** | **1.12** | **1.73** |
| Panic disorder | **1.25** | **1.05** | **1.49** | **2.02** | **1.57** | **2.61** | | | | **2.54** | **1.98** | **3.24** |
| Specific phobia | 0.94 | 0.80 | 1.10 | 1.13 | 0.91 | 1.40 | 1.00 | 0.87 | 1.13 | | | |
| PTSD | 1.00 | 0.84 | 1.21 | **0.73** | **0.53** | **0.99** | 1.12 | 0.93 | 1.35 | 1.24 | 0.93 | 1.65 |
| **Any personality disorder** | | | | | | | | | | | | |
| Avoidant | 1.01 | 0.78 | 1.29 | **1.57** | **1.16** | **2.12** | **0.77** | **0.62** | **0.97** | 0.84 | 0.59 | 1.21 |
| Dependant | 1.00 | 0.68 | 1.47 | 1.37 | 0.85 | 2.20 | 1.41 | 0.97 | 2.04 | 1.65 | 0.98 | 2.76 |
| Obsessive-compulssive | 1.02 | 0.85 | 1.23 | 0.87 | 0.68 | 1.11 | **0.83** | **0.71** | **0.97** | **0.72** | **0.53** | **0.98** |
| Paranoid | **0.79** | **0.64** | **0.97** | 0.90 | 0.66 | 1.22 | 0.84 | 0.68 | 1.04 | 1.07 | 0.80 | 1.42 |
| Schizoid | 0.90 | 0.67 | 1.20 | **0.67** | **0.49** | **0.92** | 1.04 | 0.84 | 1.28 | 0.83 | 0.59 | 1.16 |
| Schizotypical | 0.84 | 0.67 | 1.04 | 1.29 | 1.00 | 1.66 | 0.91 | 0.74 | 1.12 | 0.93 | 0.68 | 1.27 |
| Narcisistic | 1.10 | 0.91 | 1.33 | 1.17 | 0.86 | 1.59 | 0.90 | 0.74 | 1.08 | 1.12 | 0.79 | 1.61 |
| Borderline | **1.21** | **1.00** | **1.47** | 1.12 | 0.83 | 1.51 | 1.10 | 0.93 | 1.30 | 1.17 | 0.87 | 1.57 |
| Histrionic | 1.07 | 0.78 | 1.46 | 0.79 | 0.51 | 1.23 | 1.05 | 0.81 | 1.37 | 1.08 | 0.74 | 1.57 |
| Antisocial | **0.67** | **0.49** | **0.92** | 0.88 | 0.62 | 1.27 | 0.87 | 0.68 | 1.10 | 0.65 | 0.41 | 1.05 |
| **Pathological Gambling** | 0.67 | 0.22 | 2.03 | 1.26 | 0.26 | 6.14 | 0.91 | 0.50 | 1.65 | 0.83 | 0.24 | 2.91 |
| **ADHD** | 0.89 | 0.71 | 1.13 | 0.84 | 0.59 | 1.19 | 0.98 | 0.77 | 1.24 | 0.89 | 0.62 | 1.28 |

Tabla 4. Effects of sociodemographic variables on treatment contact in individuals with substance use disorders in the United States.

| Variable | Alcohol abuse | | | Alcohol dependence | | | Drug abus | | | Drug dependence | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AHR | 95% CI | | AHR | 95%CI | | AHR | 95%CI | | AHR | 95%CI | |
| **Sex** | | | | | | | | | | | | |
| Male | **1.73** | **1.23** | **2.42** | 1.20 | 0.99 | 1.45 | **0.69** | **0.52** | **0.91** | 0.88 | 0.64 | 1.22 |
| Female | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| **Race/ethnicity** | | | | | | | | | | | | |
| White | 1.00 | 1.00. | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Blacks | 0.91 | 0.57 | 1.46 | 0.88 | 0.68 | 1.13 | 0.88 | 0.57 | 1.37 | 0.69 | 0.46 | 1.02 |
| Native Americans | 0.73 | 0.29 | 1.83 | 1.38 | 0.94 | 2.04 | **0.25** | **0.08** | **0.79** | 0.66 | 0.34 | 1.28 |
| Asians | 0.91 | 0.15 | 5.40 | 0.57 | 0.20 | 1.60 | 1.47 | 0.48 | 5.54 | 1.11 | 0.43 | 2.87 |
| Hispanic | 1.51 | 0.86 | 2.64 | 1.05 | 0.78 | 1.40 | 1.01 | 0.66 | 1.54 | 0.90 | 0.61 | 1.33 |
| **Nativity** | | | | | | | | | | | | |
| US Born | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Foreign Born | 1.00 | 0.45 | 2.19 | 0.70 | 0.41 | 1.20 | 1.29 | 0.65 | 2.60 | 1.59 | 0.88 | 2.85 |
| **Age at onset** | **1.06** | **1.04** | **1.07** | **1.05** | **1.03** | **1.06** | 1.01 | 0.98 | 1.04 | 1.01 | 0.99 | 1.04 |
| **Educational Years** | | | | | | | | | | | | |
| 0-11 | **4.33** | **2.49** | **7.54** | **1.71** | **1.26** | **2.32** | **1.86** | **1.02** | **3.39** | 1.25 | 0.67 | 2.34 |
| 12 | **2.40** | **1.54** | **3.74** | **1.37** | **1.05** | **1.77** | 1.31 | 0.74 | 2.32 | 1.51 | 0.85 | 2.68 |
| 13-15 | **1.98** | **1.28** | **3.06** | 1.25 | 0.97 | 1.61 | 1.26 | 0.74 | 2.14 | 1.30 | 0.76 | 2.22 |
| > 16 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| **Cohort** | | | | | | | | | | | | |
| 1976-1985 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 1966-1975 | 0.68 | 0.36 | 1.29 | 0.88 | 0.63 | 1.23 | 0.70 | 0.48 | 1.04 | 0.73 | 0.47 | 1.14 |
| 1956-1965 | **0.40** | **0.21** | **0.74** | 0.96 | 0.68 | 1.34 | **0.49** | **0.31** | **0.77** | **0.46** | **0.28** | **0.78** |
| 1946-1955 | **0.27** | **0.14** | **0.50** | 0.81 | 0.54 | 1.22 | **0.37** | **0.15** | **0.90** | 1.11 | 0.46 | 2.68 |
| 1936-1945 | **0.12** | **0.06** | **0.25** | 0.66 | 0.40 | 1.11 | <0.01 | <0.01 | <0.01 | 0.26 | 0.03 | 2.09 |
| **Marital Status** | | | | | | | | | | | | |
| Married/living with someone as if married | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Widowed/separated/divorced/stopped living with someone as if married | **2.10** | **1.40** | **3.16** | **1.39** | **1.12** | **1.72** | 0.90 | 0.52 | 1.57 | 0.95 | 0.59 | 1.53 |
| Never married | **2.98** | **2.13** | **4.17** | **1.57** | **1.25** | **1.97** | 1.40 | 0.94 | 2.08 | 1.36 | 0.92 | 2.00 |
| Marital transition | **0.58** | **0.34** | **0.97** | 0.93 | 0.76 | 1.15 | 1.41 | 0.99 | 2.00 | 1.03 | 0.76 | 1.39 |
| **Past substance use treatment** | **6.15** | **3.21** | **11.76** | **5.38** | **4.16** | **6.96** | **12.53** | **9.01** | **17.41** | **10.64** | **7.73** | **14.65** |
| **Past mental health treatment** | **2.11** | **1.36** | **3.29** | 1.20 | 0.96 | 1.52 | 1.38 | 0.87 | 2.17 | **1.44** | **1.03** | **2.03** |

**Tabla 5. Effects of comorbidity on treatment contact in individuals with substance use disorders**

| Variable | Alcohol abuse (N=5947) AHR | 95% CI | | Alcohol dependence (N=4863) AHR | 95% CI | | Drug abuse (N=3228) AHR | 95%CI | | Drug Dependence (N=1062) AHR | 95%CI | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Any alcohol abuse** | N/A | N/A | N/A | 1.00 | 0.65 | 1.54 | **0.51** | **0.31** | **0.84** | 0.60 | 0.36 | 1.01 |
| **Any alcohol dependence** | N/A | N/A | N/A | N/A | N/A | N/A | **0.62** | **0.47** | **0.82** | **0.59** | **0.45** | **0.77** |
| **Any drug abuse** | 1.52 | 0.89 | 2.58 | 1.21 | 0.96 | 1.51 | N/A | N/A | N/A | 0.79 | 0.62 | 1.01 |
| **Any drug dependence** | 0.85 | 0.24 | 3.05 | 1.24 | 0.91 | 1.69 | N/A | N/A | N/A | N/A | N/A | N/A |
| Nicotine dependence | 0.85 | 0.55 | 1.31 | 1.08 | 0.90 | 1.29 | 1.23 | 0.86 | 1.77 | 0.87 | 0.66 | 1.16 |
| **Mood disorders** | | | | | | | | | | | | |
| Dysthymia | 1.19 | 0.36 | 3.91 | **1.51** | **1.02** | **2.25** | **2.74** | **1.50** | **4.99** | 1.22 | 0.71 | 2.12 |
| MDD | **1.67** | **1.06** | **2.64** | 1.08 | 0.77 | 1.52 | 0.97 | 0.62 | 1.51 | 0.76 | 0.50 | 1.16 |
| Bipolar Disorder | **3.95** | **2.26** | **6.92** | **1.45** | **1.09** | **1.94** | 1.36 | 0.80 | 2.33 | 1.37 | 0.89 | 1.82 |
| **Any anxiety disorder** | | | | | | | | | | | | |
| Generalized anxiety disorder | 0.71 | 0.27 | 1.85 | 0.98 | 0.68 | 1.40 | 0.92 | 0.52 | 1.63 | 1.15 | 0.70 | 1.91 |
| Social anxiety disorder | 0.51 | 0.17 | 1.57 | 0.98 | 0.75 | 1.27 | 0.82 | 0.45 | 1.46 | 0.65 | 0.43 | 1.01 |
| Panic disorder | 0.37 | 0.11 | 1.25 | 1.14 | 0.76 | 1.69 | 0.98 | 0.551 | 1.89 | 1.12 | 0.73 | 1.72 |
| Specific phobia | **0.48** | **0.25** | **0.93** | 0.91 | 0.72 | 1.14 | 1.22 | 0.79 | 1.88 | 1.39 | 0.95 | 2.04 |
| PTSD | 1.22 | 0.56 | 2.68 | **1.43** | **1.05** | **1.96** | 1.02 | 0.56 | 1.86 | 0.79 | 0.45 | 1.40 |
| **Any personality disorder** | | | | | | | | | | | | |
| Avoidant | 0.90 | 0.36 | 2.24 | 0.98 | 0.68 | 1.42 | 1.22 | 0.60 | 2.46 | **1.59** | **1.01** | **2.52** |
| Dependant | 0.74 | 0.08 | 6.45 | **1.90** | **1.09** | **3.33** | 0.26 | 0.03 | 2.50 | 0.73 | 0.30 | 1.77 |
| Obsessive-compulssive | 0.94 | 0.57 | 1.54 | 0.78 | 0.60 | 1.02 | 0.95 | 0.58 | 1.57 | 0.73 | 0.45 | 1.18 |
| Paranoid | 1.11 | 0.56 | 2.22 | 0.94 | 0.68 | 1.29 | 0.77 | 0.41 | 1.45 | 0.99 | 0.64 | 1.53 |
| Schizoid | 1.08 | 0.52 | 2.25 | 1.04 | 0.75 | 1.43 | **1.95** | **1.20** | **3.16** | 1.29 | 0.82 | 2.05 |
| Schizotypical | 0.86 | 0.48 | 1.54 | 0.94 | 0.71 | 1.25 | 0.64 | 0.36 | 1.13 | 0.83 | 0.57 | 1.22 |
| Narcisistic | **0.51** | **0.29** | **0.90** | 0.90 | 0.68 | 1.20 | 0.88 | 0.56 | 1.40 | 0.91 | 0.64 | 1.32 |
| Borderline | 1.33 | 0.77 | 2.31 | 1.15 | 0.89 | 1.48 | 1.49 | 0.99 | 2.24 | 1.18 | 0.79 | 1.77 |
| Histrionic | 1.98 | 0.71 | 5.49 | 1.03 | 0.74 | 1.44 | 0.58 | 0.30 | 1.10 | 0.74 | 0.45 | 1.20 |
| Antisocial | 1.20 | 0.76 | 1.90 | 1.06 | 0.84 | 1.33 | 0.93 | 0.64 | 1.36 | **0.50** | **0.35** | **0.72** |
| **Pathological Gambling** | 3.13 | 0.43 | 23.01 | 0.71 | 0.23 | 2.22 | <0.01 | <0.01 | <0.01 | 0.56 | 0.25 | 1.25 |
| **ADHD** | 1.48 | 0.39 | 5.56 | 1.12 | 0.79 | 1.58 | 0.99 | 0.58 | 1.68 | 0.87 | 0.51 | 1.48 |

**Tabla 6. Survival analysis of sociodemographic characteristics on the time to seeking treatment for prescription drugs use disorder, unadjusted and adjusted analyses**

| | | Unadjusted HR | 95%CI | | Adjusted HRc | 95%CI | |
|---|---|---|---|---|---|---|---|
| **Sex** | Male | **0.58** | **0.36** | **0.92** | 0.68 | 0.42 | 1.08 |
| | Female | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| **Race/Ethnicity** | White (ref) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Black | 0.83 | 0.43 | 1.61 | 0.70 | 0.38 | 1.30 |
| | Native Americans | 0.52 | 0.18 | 1.54 | 0.81 | 0.34 | 1.91 |
| | Asian | 3.08 | 0.91 | 10.45 | **5.22** | **1.67** | **16.27** |
| | Hispanic | 1.33 | 0.50 | 3.52 | 0.81 | 0.35 | 1.88 |
| **Nativity** | US-born (ref) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Foreign-born | 2.33 | 0.72 | 7.50 | 1.49 | 0.49 | 4.52 |
| **Age at prescription opioid use disorder onset** | | **1.13** | **1.09** | **1.17** | **1.10** | **1.06** | **1.14** |
| **Educational years** | | 1.01 | 0.94 | 1.10 | 0.99 | 0.90 | 1.10 |
| **Marital Status** | Married | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Widowed/ separated/ divorced | 1.54 | 0.87 | 2.74 | 0.98 | 0.54 | 1.78 |
| | Never Married | 1.33 | 0.80 | 2.22 | 1.15 | 0.70 | 1.88 |
| **Lifetime Comorbidity** | Alcohol Use Disorder | **1.97** | **1.26** | **3.07** | 1.44 | 0.97 | 2.15 |
| | Drug Use Disorder | **1.93** | **1.12** | **3.31** | 1.30 | 0.83 | 2.03 |
| | Nicotine Dependence | **1.72** | **1.09** | **2.71** | 1.32 | 0.84 | 2.07 |
| | Dysthymia | **2.70** | **1.38** | **5.28** | 1.30 | 0.62 | 2.74 |
| | Major Depressive Disorder | **2.32** | **1.44** | **3.75** | **2.24** | **1.29** | **3.90** |
| | Bipolar Disorder | **3.65** | **2.07** | **6.42** | **2.59** | **1.44** | **4.67** |
| | Panic disorder | **3.00** | **1.55** | **5.83** | 1.18 | 0.62 | 2.24 |
| | Social Anxiety Disorder | 1.60 | 0.74 | 3.46 | 0.58 | 0.24 | 1.38 |
| | Specific Phobia | **2.11** | **1.26** | **3.54** | **1.84** | **1.06** | **3.20** |
| | Posttraumatic Stress Disorder | 1.75 | 0.91 | 3.37 | 0.90 | 0.44 | 1.85 |
| | Generalized Anxiety Disorder | **3.50** | **1.97** | **6.24** | 1.49 | 0.73 | 3.04 |
| | ClusterA | **1.81** | **1.02** | **3.22** | 1.17 | 0.67 | 2.05 |
| | ClusterB | **2.49** | **1.52** | **4.06** | **1.76** | **1.04** | **3.00** |
| | ClusterC | 1.26 | 0.74 | 2.16 | 0.67 | 0.38 | 1.18 |

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# 11 ANEXO. PUBLICACIONES.

# Probability and Predictors of First Treatment Contact for Anxiety Disorders in the United States: Analysis of Data From the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC)

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## ABSTRACT

***Background:*** Despite the high prevalence of anxiety disorders and the demonstrated efficacy of their treatment, most individuals with anxiety disorders never utilize mental health services.

***Objective:*** To identify predictors of treatment-seeking for *DSM-IV* anxiety disorders from a range of sociodemographic factors and comorbid mental disorders.

***Design:*** Survival analysis with time-varying covariates was performed using data from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC).

***Setting:*** Face-to-face interviews conducted in the United States.

***Participants:*** 34,653 respondents, aged 18 years and older, from the 2004–2005 Wave 2 NESARC.

***Main Outcome Measure:*** The cumulative probability of treatment-seeking (assessed by the Alcohol Use Disorder and Associated Disabilities Interview Schedule–*DSM-IV* version, Wave 2 version) across the anxiety disorders in 1 year, 10 years, and lifetime and the median delay to the first treatment contact.

***Results:*** Most individuals with panic disorder sought treatment within the same year of disorder onset, whereas the median delays to first treatment contact for generalized anxiety disorder, specific phobia, and social anxiety disorder were 1 year, 13 years, and 16 years, respectively. Several personality disorders and earlier age at anxiety disorder onset decreased the probability of treatment contact. By contrast, younger cohort membership, a recent change in marital status, treatment for a psychiatric disorder other than substance use disorder, and comorbid anxiety disorders increased the lifetime probability of treatment contact.

***Conclusions:*** Treatment-seeking rates for most anxiety disorders are low, are associated with long delays, and sometimes are hindered by co-occurrence of other psychopathology. These patterns highlight the complex interplay of personal characteristics, individual psychopathology, and social variables in the treatment-seeking process.


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Despite the high prevalence of anxiety disorders[1] and the demonstrated efficacy of their treatment,[2–5] most individuals with anxiety disorders never utilize mental health services.[6,7] Because the quality of life of adults with anxiety disorders equals or falls below that associated with several chronic general medical diseases,[8] identifying factors that promote treatment-seeking for anxiety disorders is a matter of considerable public health concern.

A few prior studies[9–15] have examined the probability and predictors of treatment-seeking for anxiety disorders. According to the National Comorbidity Survey, substantial variation exists in the cumulative lifetime probability of treatment-seeking among anxiety disorders, ranging from social anxiety disorder and specific phobias (31%) to panic disorder (73%).[9] There was also substantial variation in the probability of treatment contact in the year after disorder onset. For example, individuals with panic disorder (50%) are far more likely than those with phobias (10%) to seek treatment in the year after disorder onset. A decade later, results from the National Comorbidity Survey Replication revealed similar variation in treatment-seeking across anxiety disorders.[10]

Prior studies have also identified several sociodemographic predictors of treatment-seeking, including female gender,[11–13] higher educational attainment,[11] white race,[14] and widowed, separated, or divorced marital status.[12] Belonging to younger cohorts[9,10,12,13] also increased the probability of treatment contact, whereas having an early onset of the disorder was associated with longer delays in treatment-seeking.[15]

Little is known about the role of psychiatric comorbidity in the probability and timing of mental health treatment-seeking among individuals with anxiety disorders. Prior studies[13,16,17] have suggested that comorbidity may influence the time to first treatment contact and that co-occurring anxiety disorders, specific phobia, panic disorder, and generalized anxiety disorder may shorten the time to first treatment for other psychiatric disorders including major depressive disorder and prescription opioid use disorder. However, whether comorbid psychiatric disorders influence time to first treatment contact for anxiety disorders is unknown. A greater understanding of these relationships will help to focus outreach efforts on individuals at especially high risk for long delays in treatment-seeking for their anxiety disorders. We sought to build on prior findings by examining the effects on the lifetime cumulative probability of first treatment contact of a broad range of sociodemographic characteristics and to extend this line of

research to include a focus on the role of comorbid *DSM-IV* Axis I and II disorders. We draw on data from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), a large nationally representative sample of US adults. We hypothesized that, consistent with prior studies, later age at onset, younger cohorts, female gender, psychiatric comorbidity, and not belonging to a racial or ethnic minority would emerge as predictors of treatment-seeking.

- There is broad variation in time to first treatment contact for anxiety disorders, ranging from 1 year for panic disorder to 16 years for social anxiety disorder.
- Early onset of a disorder and presence of comorbid personality disorders are frequently associated with longer delays in treatment-seeking for anxiety disorders.
- Prior mental health treatment, but not prior substance abuse treatment, increases the probability of treatment-seeking for anxiety disorder, indicating problems with the integration of treatment of anxiety and substance use disorders.

Clinical Points

## METHOD

### Sample

This study used data from the 2004–2005 Wave 2 NESARC.[18] The target population was the civilian, noninstitutionalized population in the United States, aged 18 years and older, and residing in households and group quarters (eg, college quarters, group homes, boarding houses, and nontransient hotels). In Wave 2, attempts were made to conduct face-to-face reinterviews with all 43,093 respondents to the Wave 1 interview. Excluding respondents ineligible for the Wave 2 interview (eg, deceased), the Wave 2 response rate was 86.7%; thus, 34,653 respondents completed Wave 2 interviews. Wave 2 responders contributed to Wave 1 and 2. Sample weights were developed to additionally adjust for Wave 2 nonresponse.[19] Comparisons between Wave 2 respondents and the target population (comprising Wave 2 respondents and eligible nonrespondents) indicated that there were no significant differences in terms of a number of baseline (Wave 1) sociodemographic measures or the presence of any lifetime substance, mood, anxiety, or personality disorder.[20]

### Assessment

Data were collected using the National Institute on Alcohol Abuse and Alcoholism's Alcohol Use Disorder and Associated Disabilities Interview Schedule–*DSM-IV* Version (AUDADIS-IV),[21] Wave 2 version.[22] The AUDADIS-IV is a structured diagnostic interview, developed to advance measurement of substance use and mental disorders in large-scale surveys.[23,24]

On the basis of *DSM-IV* criteria, social anxiety disorder was diagnosed by the presence of a marked and persistent fear of one or more social or performance situations in which the respondent is exposed to unfamiliar people or to the possible scrutiny of others. Diagnosis required that exposure to the feared situation(s) almost invariably provoked anxiety, that the respondent recognized the fear as excessive or unreasonable, and that social anxiety was associated with avoidance of the feared situations or resulted in intense anxiety or distress. Generalized anxiety disorder was diagnosed when excessive and uncontrollable anxiety and worry were present more days than not for at least 6 months, accompanied by at least 3 of 6 symptoms of restlessness, fatigue, impaired concentration, irritability, muscle tension, or sleep disturbance, as outlined by *DSM-IV*. Panic disorder was diagnosed when the respondent endorsed a recurrence of unexpected discrete periods of intense fear or discomfort, during which times 4 or more *DSM-IV* panic symptoms developed abruptly and reached a peak within 10 minutes. Symptoms had to be accompanied by a persistent concern about having additional attacks, worry about the implications of the attacks, or significant behavioral change related to the attacks. Specific phobia (*DSM-IV*) was diagnosed when the respondent endorsed the presence of a marked or persistent fear that was cued by the presence or anticipation of a specific object or situation. Exposure to the feared object or situation had to invariably provoke an immediate and excessive or unreasonable anxiety response, and the respondent had to recognize that the fear was excessive or unreasonable.

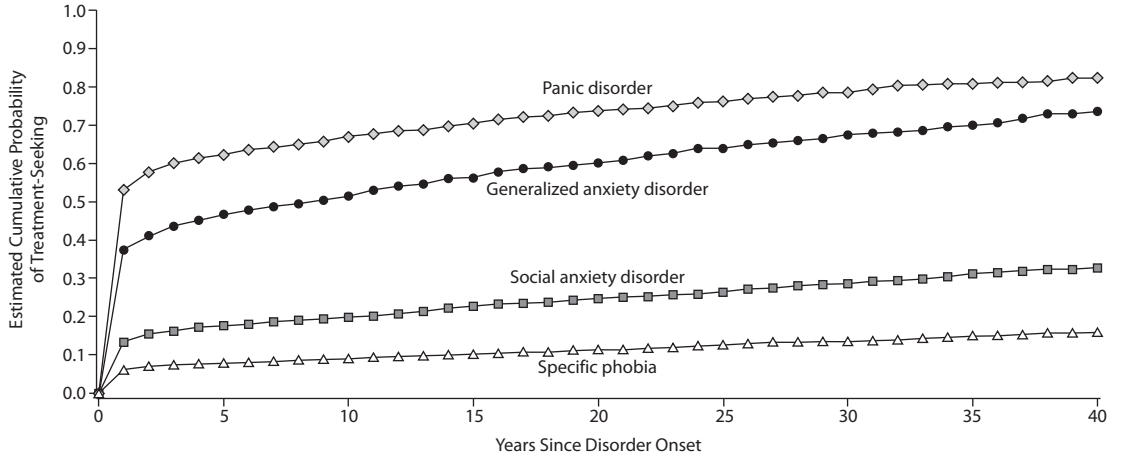
For each anxiety disorder, diagnosis required the *DSM-IV* clinical significance criterion in addition to sufficient symptom endorsements. The AUDADIS-IV also evaluated all potential diagnostic rule-outs in accord with *DSM-IV* (eg, symptoms due to direct physical effects of a substance or general medical condition, or better accounted for by another mental disorder). Respondents were considered to have sought treatment if they reported having ever gone to any kind of counselor, therapist, doctor, psychologist, or any other service provider to receive help for their anxiety symptoms.

### Statistical Analyses

Among respondents with lifetime anxiety disorders, weighted cross-tabulations were used to calculate the proportion who had ever sought treatment for anxiety disorders overall and by respondent sociodemographic and clinical characteristics by using a Cox proportional hazard regression model with time-varying covariates.

To assess the effects of sociodemographic and clinical characteristics on time to first anxiety disorder treatment contact, survival analysis models with time-varying covariates were performed. Retrospective follow-up time started at age of anxiety disorder onset and terminated at age of first treatment contact. The probability of treatment-seeking for each anxiety disorder was first modeled separately for each individual sociodemographic and diagnostic predictor and again in a single model that controlled for the potentially confounding effects of sex, race or ethnicity, nativity, age at anxiety disorder onset, education years, marital status, and each of the other Axis I and II psychiatric diagnostic categories. Comorbid mental disorders, respondent age,

**Figure 1. Probability of Treatment-Seeking for Anxiety Disorders Since Onset of Diagnosis**




marital status, and educational level were also added as variables varying over time.

Personality disorders were coded as lifetime disorders with onset at age 18. Results are reported as adjusted hazard ratios with associated 95% CIs. Standard errors and 95% CIs for all analyses were estimated using SUDAAN software (Research Triangle Institute; Research Triangle Park, North Carolina) to adjust for the complex design of the NESARC.

## RESULTS

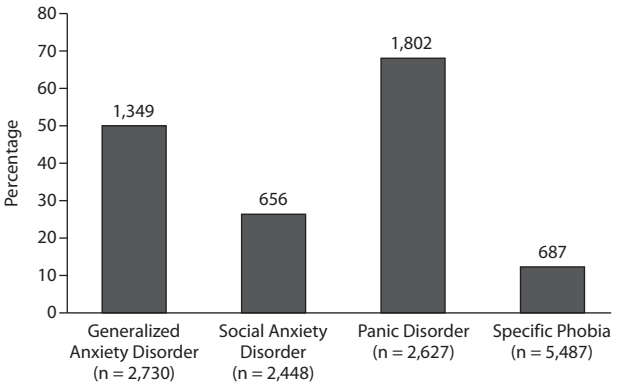
### Speed to Initial Treatment-Seeking

The cumulative probability of treatment-seeking varied across the anxiety disorders. Panic disorder was associated with the fastest, and specific phobia the slowest, speed to treatment (Figure 1). In the first year following disorder onset, individuals with panic disorder (53%) were nearly 9 times more likely than those with specific phobia (6%) to have sought treatment. Treatment-seeking in the first year following disorder onset was intermediate for generalized anxiety disorder (38%) and social anxiety disorder (14%). Among those who ever sought treatment, more than half of individuals with panic disorder sought treatment within the year of disorder onset, whereas the median delays to first treatment contact for generalized anxiety disorder, specific phobia, and social anxiety disorder were 1 year, 13 years, and 16 years, respectively (see Figure 1). The percentages of people who had sought treatment by the date of the interview varied by disorder: panic disorder (67.51%), generalized anxiety disorder (49.84%), social anxiety disorder (26.02%), and specific phobia (12.51%) (Figure 2).

### Demographic Correlates of Treatment-Seeking

Regarding sociodemographic characteristics, men with generalized anxiety disorder had longer delays than women to first treatment contact, but there were no other gender or racial/ethnic differences in rates of treatment-seeking for any other anxiety disorder. Later age at onset was associated with shorter treatment delays for all the anxiety disorders. Respondents with fewer years of education were less likely

**Figure 2. Percentage of Individuals Who Had Sought Treatment at the Time of Interview, Shown by Each Anxiety Disorder**




to seek treatment for all the anxiety disorders except for panic disorder, for which no significant differences were found between the different levels of formal education. Widowed, separated, or divorced marital status decreased the likelihood of seeking treatment for generalized anxiety disorder, whereas married individuals were more likely to seek treatment for social anxiety disorder but were less likely to seek treatment for panic disorder. Individuals with anxiety disorders who had any change in their marital status within a year from the interview were more likely to seek treatment. Having received treatment for a mental disorder other than a substance use disorder strongly predicted help-seeking for all anxiety disorders (Table 1).

### Psychiatric Comorbidity Correlates of Treatment-Seeking

After adjusting for the effects of other covariates, we found that several comorbid mental disorders independently affected the probability of treatment-seeking for anxiety disorders. Several personality disorders decreased the probability of treatment-seeking. Individuals with avoidant personality disorder were less likely to seek treatment for

**Table 1. Effects of Sociodemographic Variables on Treatment Contact in Individuals With Each Anxiety Disorder[a]**

| | Generalized Anxiety Disorder (n = 2,624) | | | | Social Anxiety Disorder (n = 2,367) | | | | Panic Disorder (n = 2,524) | | | | Specific Phobia (n = 5,352) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Adjusted | | | | Adjusted | | | | Adjusted | | | | Adjusted | |
| Variable | HR | 95% CI | HR[b] | 95% CI | HR | 95% CI | HR[b] | 95% CI | HR | 95% CI | HR[b] | 95% CI | HR | 95% CI | HR[b] | 95% CI |
| Sex | | | | | | | | | | | | | | | | |
| Male | **0.69** | **0.55–0.86** | **0.78** | **0.66–0.93** | 0.86 | 0.68–1.10 | 1.12 | 0.89–1.42 | 0.90 | 0.71–1.14 | 1.11 | 0.96–1.30 | 0.84 | 0.65–1.08 | 0.90 | 0.70–1.16 |
| Female | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 |
| Race/ethnicity | | | | | | | | | | | | | | | | |
| White | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 |
| Black | 0.87 | 0.66–1.15 | 0.84 | 0.68–1.04 | 1.27 | 0.94–1.71 | 0.87 | 0.64–1.19 | 1.02 | 0.80–1.31 | 0.84 | 0.68–1.03 | **0.63** | **0.46–0.88** | **0.73** | **0.53–0.99** |
| Native American | 1.08 | 0.61–1.90 | 1.01 | 0.71–1.45 | 0.96 | 0.57–1.62 | 1.00 | 0.62–1.63 | 0.92 | 0.55–1.53 | 1.01 | 0.72–1.41 | 1.12 | 0.61–2.04 | 1.09 | 0.64–1.86 |
| Asian | 0.93 | 0.36–2.37 | 1.13 | 0.55–2.29 | 1.46 | 0.56–3.82 | 1.25 | 0.59–2.64 | **0.45** | **0.21–0.97** | 0.73 | 0.45–1.19 | 0.69 | 0.26–1.82 | 1.06 | 0.44–2.54 |
| Hispanic | 0.88 | 0.69–1.12 | 0.82 | 0.66–1.03 | 1.44 | 0.98–2.12 | 1.08 | 0.75–1.56 | 1.13 | 0.86–1.47 | 1.03 | 0.83–1.28 | 1.02 | 0.73–1.41 | 1.04 | 0.74–1.46 |
| Nativity | | | | | | | | | | | | | | | | |
| US born | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 |
| Foreign born | 0.94 | 0.66–1.33 | 1.20 | 0.92–1.57 | 1.09 | 0.70–1.67 | 0.99 | 0.69–1.44 | **0.71** | **0.52–0.95** | 0.80 | 0.61–1.05 | 0.74 | 0.51–1.09 | 0.71 | 0.50–1.01 |
| Age at onset | **1.15** | **1.12–1.17** | **1.12** | **1.10–1.14** | **1.10** | **1.09–1.12** | **1.06** | **1.05–1.07** | **1.15** | **1.13–1.17** | **1.13** | **1.11–1.15** | **1.09** | **1.08–1.10** | **1.06** | **1.05–1.07** |
| Years of education | | | | | | | | | | | | | | | | |
| 0–11 | **0.65** | **0.46–0.91** | **0.69** | **0.54–0.88** | **0.64** | **0.43–0.96** | 0.78 | 0.54–1.12 | 0.81 | 0.58–1.14 | 1.00 | 0.78–1.27 | **0.64** | **0.45–0.91** | **0.65** | **0.46–0.91** |
| 12 | 0.82 | 0.64–1.07 | **0.79** | **0.65–0.97** | **0.71** | **0.52–0.98** | 0.75 | 0.57–1.00 | 0.91 | 0.70–1.18 | 1.04 | 0.85–1.26 | **0.68** | **0.51–0.91** | **0.59** | **0.44–0.78** |
| 13–15 | 0.92 | 0.72–1.18 | 0.94 | 0.79–1.11 | 0.84 | 0.62–1.15 | **0.67** | **0.50–0.90** | 1.09 | 0.85–1.41 | 1.02 | 0.86–1.22 | 0.86 | 0.66–1.12 | 0.64 | 0.50–0.82 |
| ≥ 16 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 |
| Cohort | | | | | | | | | | | | | | | | |
| 1976–1985 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 |
| 1966–1975 | 0.85 | 0.58–1.24 | 1.04 | 0.72–1.52 | **0.55** | **0.36–0.83** | **0.71** | **0.48–1.03** | 0.88 | 0.64–1.22 | 1.00 | 0.78–1.29 | **0.44** | **0.28–0.72** | **0.57** | **0.35–0.94** |
| 1956–1965 | **0.64** | **0.43–0.95** | 1.01 | 0.70–1.46 | **0.23** | **0.14–0.35** | **0.43** | **0.28–0.66** | **0.64** | **0.46–0.90** | 0.84 | 0.64–1.11 | **0.23** | **0.13–0.39** | **0.46** | **0.26–0.81** |
| 1946–1955 | **0.41** | **0.27–0.63** | 0.82 | 0.55–1.21 | **0.09** | **0.05–0.14** | **0.27** | **0.16–0.44** | **0.32** | **0.22–0.46** | **0.53** | **0.39–0.72** | **0.10** | **0.05–0.19** | **0.29** | **0.16–0.55** |
| 1936–1945 | **0.23** | **0.14–0.35** | 0.75 | 0.50–1.13 | **0.02** | **0.01–0.05** | **0.15** | **0.07–0.30** | **0.17** | **0.10–0.26** | **0.43** | **0.30–0.62** | **0.02** | **0.01–0.05** | **0.16** | **0.08–0.35** |
| 1901–1935 | **0.09** | **0.04–0.17** | **0.52** | **0.28–0.99** | **0.00** | **0.00–0.01** | **0.04** | **0.02–0.10** | **0.11** | **0.06–0.19** | **0.40** | **0.24–0.68** | **0.00** | **0.00–0.01** | **0.06** | **0.02–0.17** |
| Marital status | | | | | | | | | | | | | | | | |
| Married/living with someone as if married | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 | 1.00 | 1.00–1.00 |
| Widowed/separated/divorced/ stopped living with someone as if married | 1.00 | 0.81–1.23 | 0.85 | 0.71–1.02 | **1.63** | **1.24–2.15** | 0.95 | 0.71–1.27 | 1.12 | 0.91–1.38 | 0.95 | 0.81–1.11 | **1.39** | **1.08–1.81** | 0.77 | 0.59–1.00 |
| Never married | 0.97 | 0.79–1.21 | 0.92 | 0.76–1.11 | **2.24** | **1.68–2.98** | **1.39** | **1.06–1.82** | 1.04 | 0.85–1.27 | 0.90 | 0.77–1.06 | 1.30 | 0.96–1.76 | 0.80 | 0.61–1.07 |
| Marital transition (any change in marital status) | **1.88** | **1.61–2.20** | **1.18** | **1.01–1.37** | **3.47** | **2.88–4.17** | **1.27** | **1.05–1.54** | **1.80** | **1.57–2.07** | 1.12 | 0.99–1.27 | **3.74** | **2.99–4.67** | **1.57** | **1.24–1.98** |
| Past substance use treatment[c] (including alcohol use disorder and drug use disorder) | 1.23 | 0.91–1.66 | 1.11 | 0.87–1.41 | **3.11** | **2.22–4.36** | 0.95 | 0.72–1.25 | **1.56** | **1.18–2.05** | 1.08 | 0.88–1.32 | **3.22** | **2.33–4.44** | 1.12 | 0.84–1.49 |
| Past mental health treatment[c] (including mood disorder, anxiety disorder [excluding posttraumatic stress disorder], and attention-deficit/hyperactivity disorder) | **4.80** | **3.96–5.82** | **3.86** | **3.24–4.60** | **16.11** | **12.21–21.24** | **7.00** | **5.24–9.34** | **2.93** | **2.42–3.55** | **2.39** | **2.06–2.77** | **11.27** | **8.85–14.35** | **4.63** | **3.48–6.16** |

[a]Data from the National Epidemiologic Survey on Alcohol and Related Conditions, Wave 2. Significant results are in bold type. [b]Adjusted by sex, race, nativity, and age at onset. [c]Time-varying variable with a value of 1 from the first year of treatment contact onward and 0 otherwise.
Abbreviation: HR = hazard ratio.

**Table 2. Effects of Comorbidity on Treatment Contact in Individuals With Each Anxiety Disorder[a]**

| | Generalized Anxiety Disorder (n = 2,624) | | | | Social Anxiety Disorder (n = 2,367) | | | | Panic Disorder (n = 2,524) | | | | Specific Phobia (n = 5,352) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Adjusted | | | | Adjusted | | | | Adjusted | | | | Adjusted | |
| Variable | HR | 95% CI | HR[b] | 95% CI | HR | 95% CI | HR[b] | 95% CI | HR | 95% CI | HR[b] | 95% CI | HR | 95% CI | HR[b] | 95% CI |
| Any alcohol use disorder | 1.19 | 0.97–1.46 | 1.13 | 0.94–1.36 | **1.42** | **1.09–1.86** | 1.11 | 0.85–1.45 | **1.26** | **1.04–1.54** | 1.08 | 0.91–1.28 | **1.64** | **1.24–2.18** | 1.17 | 0.84–1.62 |
| Any drug use disorder | 1.15 | 0.84–1.56 | 1.13 | 0.88–1.45 | **2.22** | **1.47–3.35** | 0.88 | 0.64–1.21 | 1.03 | 0.75–1.42 | 0.84 | 0.65–1.07 | **2.90** | **1.91–4.39** | 1.20 | 0.76–1.90 |
| Nicotine dependence | 1.23 | 1.00–1.52 | 0.94 | 0.78–1.12 | **2.07** | **1.53–2.79** | 1.02 | 0.79–1.32 | **1.33** | **1.08–1.64** | 0.97 | 0.84–1.12 | **1.81** | **1.40–2.34** | 0.81 | 0.60–1.08 |
| Mood disorders | **2.01** | **1.69–2.38** | | | **4.34** | **3.45–5.46** | | | **1.60** | **1.34–1.91** | | | **4.20** | **3.40–5.18** | | |
| Dysthymia | **1.34** | **1.03–1.73** | 0.92 | 0.75–1.13 | **2.71** | **1.86–3.93** | 1.30 | 0.92–1.83 | **1.60** | **1.19–2.14** | 1.09 | 0.90–1.33 | **3.47** | **2.27–5.32** | 1.43 | 0.90–2.28 |
| Major depressive disorder | **1.73** | **1.42–2.11** | 1.03 | 0.88–1.22 | **2.74** | **2.11–3.56** | 1.10 | 0.84–1.43 | **1.40** | **1.14–1.72** | 0.95 | 0.82–1.11 | **2.47** | **1.93–3.15** | 0.83 | 0.65–1.07 |
| Bipolar disorder | **1.47** | **1.17–1.85** | **1.23** | **1.02–1.49** | **3.77** | **2.87–4.94** | 1.21 | 0.92–1.59 | **1.41** | **1.10–1.81** | 1.10 | 0.94–1.30 | **4.70** | **3.54–6.23** | **1.43** | **1.07–1.92** |
| Any anxiety disorder[c] | **1.46** | **1.22–1.74** | | | **3.76** | **3.02–4.68** | | | **1.51** | **1.29–1.78** | | | **5.50** | **4.40–6.89** | | |
| Generalized anxiety disorder | **4.46** | **3.56–5.57** | | | **7.12** | **5.48–9.25** | **1.71** | **1.37–2.14** | **2.04** | **1.66–2.50** | 1.06 | 0.92–1.23 | **7.36** | **5.65–9.59** | **1.69** | **1.32–2.18** |
| Social anxiety disorder | **1.35** | **1.08–1.67** | 1.13 | 0.95–1.33 | **2.78** | **1.94–3.97** | | | 1.11 | 0.89–1.39 | 1.06 | 0.92–1.23 | **3.06** | **2.42–3.86** | **1.40** | **1.12–1.73** |
| Panic disorder | **2.07** | **1.65–2.60** | **1.25** | **1.05–1.49** | **7.59** | **5.92–9.75** | **2.02** | **1.57–2.61** | **2.42** | **1.96–2.97** | | | **9.46** | **7.26–12.32** | **2.54** | **1.98–3.24** |
| Specific phobia | 1.18 | 0.95–1.46 | 0.94 | 0.80–1.10 | **2.03** | **1.60–2.58** | 1.13 | 0.91–1.40 | **1.42** | **1.18–1.71** | 1.00 | 0.87–1.13 | **1.46** | **1.08–1.99** | | |
| Posttraumatic stress disorder | **1.48** | **1.17–1.87** | 1.00 | 0.84–1.21 | **3.17** | **2.24–4.50** | **0.73** | **0.53–0.99** | **1.94** | **1.47–2.56** | 1.12 | 0.93–1.35 | **4.78** | **3.39–6.73** | 1.24 | 0.93–1.65 |
| Any personality disorder | 0.98 | 0.79–1.22 | | | **2.04** | **1.60–2.59** | | | 0.90 | 0.76–1.07 | | | **1.95** | **1.57–2.43** | | |
| Avoidant | 0.86 | 0.66–1.11 | 1.01 | 0.78–1.29 | **2.15** | **1.67–2.77** | **1.57** | **1.16–2.12** | 0.81 | 0.61–1.07 | **0.77** | **0.62–0.97** | **2.31** | **1.71–3.11** | 0.84 | 0.59–1.21 |
| Dependant | 1.32 | 0.88–1.97 | 1.00 | 0.68–1.47 | **3.79** | **2.37–6.08** | 1.37 | 0.85–2.20 | 1.18 | 0.70–1.97 | 1.41 | 0.97–2.04 | **3.94** | **2.23–6.98** | 1.65 | 0.98–2.76 |
| Obsessive-compulsive | 0.85 | 0.68–1.07 | 1.02 | 0.85–1.23 | 0.91 | 0.71–1.17 | 0.87 | 0.68–1.11 | 0.81 | 0.64–1.02 | **0.83** | **0.71–0.97** | 0.95 | 0.71–1.27 | **0.72** | **0.53–0.98** |
| Paranoid | **0.77** | **0.60–0.98** | **0.79** | **0.64–0.97** | **1.49** | **1.12–1.98** | 0.90 | 0.66–1.22 | 0.81 | 0.64–1.03 | 0.84 | 0.68–1.04 | **1.63** | **1.22–2.17** | 1.07 | 0.80–1.42 |
| Schizoid | 0.85 | 0.64–1.13 | 0.90 | 0.67–1.20 | 1.16 | 0.88–1.55 | **0.67** | **0.49–0.92** | 0.90 | 0.64–1.26 | 1.04 | 0.84–1.28 | **1.51** | **1.11–2.05** | 0.83 | 0.59–1.16 |
| Schizotypal | 1.13 | 0.87–1.46 | 0.84 | 0.67–1.04 | **2.71** | **2.11–3.48** | 1.29 | 1.00–1.66 | 1.22 | 0.97–1.53 | 0.91 | 0.74–1.12 | **3.09** | **2.28–4.19** | 0.93 | 0.68–1.27 |
| Narcissistic | **1.43** | **1.12–1.82** | 1.10 | 0.91–1.33 | **2.77** | **2.05–3.77** | 1.17 | 0.86–1.59 | 1.12 | 0.88–1.44 | 0.90 | 0.74–1.08 | **2.60** | **1.90–3.58** | 1.12 | 0.79–1.61 |
| Borderline | **1.54** | **1.25–1.89** | **1.21** | **1.00–1.47** | **3.81** | **2.92–4.96** | 1.12 | 0.83–1.51 | 1.24 | 0.99–1.54 | 1.10 | 0.93–1.30 | **4.09** | **3.18–5.27** | 1.17 | 0.87–1.57 |
| Histrionic | 0.96 | 0.67–1.37 | 1.07 | 0.78–1.46 | 1.50 | 0.98–2.30 | 0.79 | 0.51–1.23 | 1.12 | 0.79–1.60 | 1.05 | 0.81–1.37 | 1.48 | 0.97–2.27 | 1.08 | 0.74–1.57 |
| Antisocial | **0.66** | **0.48–0.93** | **0.67** | **0.49–0.92** | 1.40 | 0.94–2.08 | 0.88 | 0.62–1.27 | 0.84 | 0.61–1.18 | 0.87 | 0.68–1.10 | 1.29 | 0.85–1.97 | 0.65 | 0.41–1.05 |
| Pathological gambling | 0.92 | 0.28–3.07 | 0.67 | 0.22–2.03 | 1.07 | 0.26–4.38 | 1.26 | 0.26–6.14 | 1.03 | 0.41–2.59 | 0.91 | 0.50–1.65 | 1.87 | 0.68–5.15 | 0.83 | 0.24–2.91 |
| Attention-deficit/hyperactivity disorder | 1.23 | 0.89–1.70 | 0.89 | 0.71–1.13 | **2.50** | **1.64–3.80** | 0.84 | 0.59–1.19 | **1.43** | **1.03–1.98** | 0.98 | 0.77–1.24 | **2.90** | **1.91–4.41** | 0.89 | 0.62–1.28 |

[a]Data from the National Epidemiologic Survey on Alcohol and Related Conditions, Wave 2. Significant results are in bold type. [b]Adjusted by sex, race, nativity, and age at onset. [c]Excluding the corresponding anxiety disorder.
Abbreviation: HR = hazard ratio.

panic disorder, whereas those with obsessive-compulsive personality disorder were less likely to seek treatment for specific phobia. Individuals with paranoid personality disorder were less likely to seek treatment for generalized anxiety disorder and panic disorder, while those with schizoid personality disorder were less likely to seek treatment for social anxiety disorder. Furthermore, antisocial personality disorder was associated with lower odds of treatment-seeking for generalized anxiety disorder and specific phobia.

By contrast, some other comorbid mental disorders increased the probability of treatment-seeking. Bipolar disorder significantly increased the probability of treatment-seeking for generalized anxiety disorder (Table 2), whereas generalized anxiety disorder increased the probability of treatment for individuals with social anxiety disorder and specific phobia. Somewhat unexpectedly, having social anxiety disorder increased the likelihood of treatment for specific phobia, whereas, consistent with its prompt speed to treatment, panic disorder increased the likelihood of treatment contact for each of the other anxiety disorders. Among individuals with social anxiety disorder, comorbid avoidant personality disorder or schizotypal personality disorder increased the likelihood of seeking treatment for social anxiety disorder in relation to those without these comorbidities (see Table 2).

## DISCUSSION

In a large nationally representative sample of US adults, the lifetime probability of treatment-seeking was highest for panic disorder, followed by generalized anxiety disorder, social anxiety disorder, and specific phobia. Delays to first treatment contact were within a year for panic disorder, a year for generalized anxiety disorder, 13 years for specific phobia, and 16 years for social anxiety disorder. These large differences are most likely due to substantial differences in perceived need or urgency for treatment across anxiety disorders. Several personality disorders and earlier onset of the anxiety disorder decreased the probability of treatment contact for anxiety disorders. By contrast, belonging to a younger cohort, having a recent change in marital status, having had treatment for a psychiatric disorder other than a substance use disorder, or having a comorbid anxiety disorder all increased the lifetime probability of treatment contact. Female gender predicted shorter time until first treatment contact for generalized anxiety disorder, but not for the other anxiety disorders.

Our study is the first to examine in detail the effects of psychiatric comorbidity on patterns of treatment-seeking for anxiety disorders. Our results indicate that having paranoid, antisocial, schizoid, or obsessive-compulsive personality disorder is associated with longer delays in treatment-seeking for generalized anxiety disorder, social anxiety disorder, panic disorder, and specific phobia, in line with the effects of these disorders on treatment-seeking for major depressive disorder.[17] Due to their profound interpersonal difficulties, individuals with paranoid and schizoid personality disorders may be reluctant to engage in the close emotional contact often associated with psychiatric treatment-seeking or may have more difficulty mobilizing their social network to help them obtain treatment. Taken together, these results suggest that personality disorders associated with lower levels of personal attachment tend to interfere with treatment-seeking for internalizing disorders and indicate that higher illness severity, as indexed by the presence of additional psychopathology, does not automatically lead to increased treatment-seeking and can in some cases interfere with the treatment-seeking process. Future studies should examine whether this finding extends to treatment-seeking for substance use disorders and other externalizing disorders.

Some comorbid psychiatric disorders increased the probability of treatment-seeking for anxiety disorders. Among personality disorders, avoidant or schizoid personality disorder increased the probability of treatment-seeking for individuals with social anxiety disorder but not other disorders. This result is consistent with findings that avoidant personality disorder often overlaps with the more severe forms of social anxiety disorder or may even be a more severe variant of social anxiety disorder[25] and suggests that the difficulties in social contact often present in schizoid personality disorder may also exacerbate those of social anxiety disorder and increase the perceived need for treatment. Schizoid personality disorder has previously been hypothesized to be part of a larger spectrum of social anxiety disorders.[26] Among Axis I disorders, the presence of an additional anxiety disorder increased the likelihood of seeking treatment for each of the anxiety disorders except panic disorder, probably due to the ceiling effect of the short time to first treatment contact for this disorder.[13] Comorbid panic disorder and generalized anxiety disorder also predict shorter delays in treatment of major depressive disorder.[17] Overall, these results suggest that panic disorder and generalized anxiety disorder may have a general effect of increasing treatment rates across psychiatric disorders.

Other findings are consistent with prior literature and confirm some factors as stable predictors of treatment-seeking. In line with some prior studies,[9,10,13,27] we found that the lifetime probability of help-seeking was highest among individuals with panic disorder and lowest among individuals with specific phobia. The distressing symptoms of panic attack, such as tachycardia, chest pain, or shortness of breath may prompt individuals to seek treatment in psychiatric or medical settings including emergency departments[28] and to do so sooner than for other disorders, even though generalized anxiety disorder[29] is associated with the lowest quality of life of the anxiety disorders. The treatment-seeking pattern suggests that perceived need may be more important than objective need in determining an individual's decision to seek treatment.[10] The sudden onset of symptoms in panic disorder may also create a greater sense of urgency than the more indolent course of generalized anxiety disorder, social anxiety disorder, and specific phobia.

Only one-half of individuals with social anxiety disorder ever sought treatment despite the high impact of social anxiety disorder on psychosocial functioning and quality

of life[30,31] and its frequent comorbidity with substance use disorders.[32–34] This pattern is consistent with prior studies[9,10] and may reflect the symptoms of the disorder or the individual's belief that social anxiety is an unmodifiable personality trait. Interventions that may not require direct contact with a clinician, at least initially, such as computer interactive or internet-delivered treatments, may help increase treatment access and therefore treatment rates for this prevalent and impairing but often underrecognized disorder.[35,36]

In line with prior studies,[9,10,15,37] we found that earlier onset of anxiety disorders is associated with longer delays to first treatment contact. At younger ages, individuals depend on adults to recognize their symptoms and help them seek treatment. Although early-onset disorders are often more severe and chronic than later-onset disorders, disorders that are not characterized by disruptive behavior may not reach the required threshold of concern necessary[9] to mobilize family resources for treatment. Competing diagnostic and treatment priorities may also interfere with the ability of pediatricians and other health care professionals who serve young people to recognize and treat this group of disorders. However, given the often persistent course of anxiety disorders, the associated disability, and the frequent comorbidity with other mental disorders and general medical disorders,[38,39] increasing treatment of early-onset anxiety constitutes an important opportunity for quality improvement.

Lower educational attainment was associated with diminished treatment-seeking across all the anxiety disorders.[10,17,40,41] Individuals with lower levels of education may have more difficulty recognizing the symptoms of anxiety, be less informed about the efficacy of psychiatric treatments, or have more difficulty accessing mental health services. The only exception to this pattern was panic disorder. As indicated, the symptoms of panic disorder may be so acute, disturbing, or readily confused with urgent cardiac events that individuals seek treatment regardless of their level of education.

Consistent with findings in major depressive disorder,[17] gender predicted time to first treatment for generalized anxiety disorder but not for the other anxiety disorders, indicating that the influence of gender on time to treatment-seeking varies by disorder.[42,43] The reason might differ depending on the disorder. Lack of gender differences in panic disorder may be related to the short time that generally elapses between disorder onset and first treatment-seeking for both genders. In the case of social anxiety disorder, the pressure to seek treatment that men experience may be counterbalanced by the higher general tendency of women to seek mental health treatment.[10,17] Specific phobia may often be perceived as not sufficiently interfering with daily activities to prompt treatment-seeking behavior.

A novel finding in this study was that transitions in marital status increased the probability of seeking treatment for all the anxiety disorders studied. This finding may reflect efforts to diminish anxiety symptoms that are perceived as contributing to maladaptive patterns within relationships. Alternatively, the finding may reflect an increase in the need for treatment associated with changes in relationships.

A history of mental health treatment was strongly associated with increased rates of help-seeking for all anxiety disorders, particularly among disorders with longer delays such as social anxiety disorder and specific phobia. Prior mental health treatment may confer familiarity with mental health help-seeking and be correlated with less stigma and fewer other attitudinal barriers to mental health care-seeking. An important exception is that prior treatment of a substance use disorder did not increase the probability of treatment-seeking for an anxiety disorder, despite the negative impact of anxiety disorders on the course and outcome of substance use disorders.[44] This result highlights the frequent disconnect of the mental health and substance use treatment systems and its negative impact on treatment access and outcome.[45–47]

The study has several limitations. First, as in previous studies of time to treatment-seeking, information about health insurance coverage, income, and geographic location for each year of the person's life was not available. Second, self-report of health care–seeking may be underreported due to the stigma associated with mental health problems and treatment. Third, disorder onset and past treatment may be recalled as occurring more recently than it actually occurred.[10]

Despite these limitations, our findings underscore important differences in the lifetime probability and time of first treatment contact among anxiety disorders and identify important predictors and impediments of treatment-seeking. It is remarkable that having certain personality disorders decreased the probability of lifetime treatment, along with an earlier age at onset, while membership in a younger cohort, a recent change in marital status, treatment for a psychiatric disorder other than a substance use disorder, and comorbid anxiety disorders increase the lifetime probability of treatment contact. These findings highlight the complex interplay of personal characteristics, individual psychopathology, and social variables in the process of treatment-seeking and will hopefully help to target efforts to accelerate the flow of individuals with anxiety disorders into mental health care.

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# Probability and predictors of treatment-seeking for substance use disorders in the U.S

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## Abstract

**Background—**Little is known about to what extent treatment-seeking behavior varies across individuals with alcohol abuse, alcohol dependence, drug abuse, and drug dependence.

**Methods—**The sample included respondents from the Wave 2 of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) who reported a lifetime diagnosis alcohol abuse, alcohol dependence, drug abuse, or drug dependence. Unadjusted and adjusted hazard ratios are presented for time to first treatment contact by sociodemographic characteristics and comorbid psychiatric disorders. Individuals were censored from the analyses if their condition remitted prior to seeking treatment.

**Results—**In the first year after disorder onset, rates of treatment-seeking were 13% for drug dependence, 5% for alcohol dependence, 2% for drug abuse, and 1% for alcohol abuse. The lifetime probability of seeking treatment among individuals who did not remit was also highest for drug dependence (90%), followed by drug abuse (60%), alcohol dependence (54%), and alcohol abuse (16%). Having had previous treatment contact for a substance use disorder (SUD) increased the probability of seeking treatment for another SUD. By contrast, an early age of SUD onset, belonging to an older cohort, and a higher level of education decreased the lifetime probability of treatment contact for SUD. The role of comorbid mental disorders was more complex, with some disorders increasing and other decreasing the probability of seeking treatment.

**Conclusions—**Given high rates of SUD and their substantial health and economic burden, these patterns suggest the need for innovative approaches to increase treatment access for individuals with SUD.

### Keywords

Treatment-seeking; Substance use disorders; Comorbidity; NESARC

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**Contributors**

Carlos Blanco designed the study and wrote the initial draft of the manuscript. Shuai Wang undertook the statistical analysis. All authors contributed to and have approved the final manuscript.

**Conflict of Interest Statement**

All the authors declare that they have no conflicts of interest.

## 1. Introduction

Substance use disorders (SUDs) are pervasive in the general population and result in critical threats to health and well-being, substantial family distress, and a massive societal economic burden (Blanco et al., 2013c; Compton et al., 2007; Hasin et al., 2007; Mokdad et al., 2004; Rubio et al., 2014, 2013). Alcohol consumption ranks third among preventable causes of death (Mokdad et al., 2004) and drug offenses are the leading cause of incarceration with half of federal inmates reporting illegal drug use in the month before their offense (Mumola and Karberg, 2004). Illicit drug use accounts for nearly two hundred billion dollars each year in healthcare, lost productivity, incarceration, and drug enforcement costs (NDIC, 2014).

Despite their high prevalence and numerous associated adverse health consequences (Aharonovich et al., 2002; Blanco et al., 2014b; Degenhardt and Hall, 2012; García-Rodríguez et al., 2014), many individuals with SUD do not receive treatment (Blanco et al., 2013a; Compton et al., 2007; Edlund et al., 2012; Hasin et al., 2007; Kessler et al., 1999; Olfson et al., 1998; Regier et al., 1993). The great extent of unmet need for substance abuse treatment underscores the critical public health importance of understanding factors that promote the flow of individuals with SUDs into treatment. Although there are important differences between perceived and objective need for substance abuse treatment (Mojtabai et al., 2002), quality of life substantially declines following the onset of SUD (Rubio et al., 2014). Because individuals with SUDs who receive treatment increase their likelihood of remission and decrease their likelihood of developing new SUDs, increasing access to SUD treatment tends to improve outcome (Blanco et al., 2014a). Of course, SUD treatment is often court mandated or occurs following the pressure exerted by friends or family members (Cook and Alegria, 2011).

Epidemiological research has sought to identify personal characteristics that either facilitate or impede treatment-seeking for SUD. Among individuals with SUDs, factors that have been associated with lower rates of SUD treatment include an earlier age of SUD onset, being married, membership in an older cohort, minority racial/ethnic ancestry, and having attained less than a high school education (Alegria et al., 2002; Gee et al., 2007; Grant, 1996; Sue et al., 1991; Sussman et al., 1987; Wang et al., 2005, 2004, 2002). Although adults with SUDs commonly have comorbid of Axis II and other Axis I psychiatric disorders (Armstrong and Costello, 2002; Blanco et al., 2013b, 2015; Havassy et al., 2004; Kessler et al., 1997; Merikangas et al., 1998; Mertens et al., 2003), the effect of psychiatric comorbidity on treatment-seeking for SUD has not been previously examined. Furthermore, despite wide variation in prevalence, severity, and associated adverse consequences (Compton et al., 2007; Hasin et al., 2007), differences in treatment seeking behavior of people with alcohol abuse, alcohol dependence, drug abuse, and drug dependence have not been extensively characterized (Wang et al., 2005).

This study draws on data from a large nationally representative sample of US adults with SUD to evaluate treatment-seeking for SUDs. Our goal is to assess the effects of type of SUD, treatment history, comorbid psychiatric disorders, and sociodemographic characteristics lifetime probability of SUD treatment.

## 2. Methods

### 2.1. Sample

The 2004–2005 Wave 2 NESARC (Grant et al., 2007b) is the second wave of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) (Grant et al., 2003a). The target population was the civilian non-institutionalized population, 18 years and older residing in households and group quarters (e.g., college quarters, group homes, boarding houses, and non-transient hotels). In Wave 2, attempts were made to conduct face-to-face re-interviews with all 43,093 respondents to the Wave 1 interview. Excluding respondents ineligible for the Wave 2 interview (e.g., deceased), the Wave 2 response rate was 86.7%; thus, 34,653 respondents completed Wave 2 interviews. Sample weights were developed to additionally adjust to Wave 2 non-response (Ruan et al., 2008). Comparisons between Wave 2 respondents and the target population (comprising Wave 2 respondents and eligible non-respondents) indicated that there were no significant differences in baseline (Wave 1) sociodemographic measures or the presence of any lifetime substance, mood, anxiety, or personality disorder (Grant et al., 2007a).

### 2.2. Assessment

Extensive AUDADIS-IV questions probed DSM-IV criteria for alcohol and drug-specific abuse and dependence for 10 classes of substances, aggregated in this report to yield diagnoses of any drug abuse and any drug dependence (Compton et al., 2007). Among individuals with drug abuse, the most commonly abused drugs were cannabis (77.8% of individuals), cocaine (19.5%), and hallucinogens (15.3%), whereas among those with dependence, the most common drugs were cannabis (51.6%), cocaine (35.0%), and amphetamine (21.1%). Good to excellent ($k = 0.70–0.91$) test–retest reliability of AUDADIS-IV SUD diagnoses have been documented in clinical and general population samples (Canino et al., 1999; Chatterji et al., 1997; Grant et al., 2003b, 1995; Hasin et al., 1997a). Convergent, discriminant and construct validity of AUDADIS-IV SUD criteria, and diagnoses were good to excellent (Cottler et al., 1997; Hasin et al., 1997b; Hasin and Paykin, 1999; Hasin et al., 1990, 1994, 2003, 1997c; Nelson et al., 1999; Pull et al., 1997; Ustun et al., 1997; Vrasti et al., 1998).

### 2.3. Statistical Analyses

Weighted cross-tabulations were used to calculate the proportion of respondents with lifetime alcohol abuse, alcohol dependence, drug abuse, and drug dependence who had ever sought treatment for their disorder. The tabulations were stratified by sociodemographic and clinical characteristics. Kaplan–Meier analyses were conducted to estimate the cumulative probability of treatment-seeking for each disorder. For all analyses, consistent with DSM-IV, abuse and dependence were treated hierarchically.

To assess the effects of sociodemographic and clinical characteristics on probability of SUD treatment contact among those with lifetime diagnoses of SUD, Cox proportional hazards models with time-varying covariates were performed. Retrospective follow-up time started at age of disorder onset and terminated at age of first treatment contact or remission of the disorder. The probabilities of treatment-seeking for alcohol abuse, alcohol dependence, drug

abuse, and drug dependence were first modeled separately for each individual sociodemographic and diagnostic predictor and again in a single model that controlled for the potentially confounding effects of sex, race/ethnicity, nativity, age at disorder onset, education years, marital status, and each of the other Axis I and II categories. Comorbid mental disorders, marital status, and educational level were also added as time varying variables. Comorbid disorders were coded as absent until their first occurrence, and then coded as present until the observation was censored. Marital status was coded as single until the individual was married for the first time (or coded as single until the observation was censored) and then modified each year the individual changed marital status. For each participant, a maximum of two changes were coded, including the first and most recent change in marital status. Educational level was coded as starting at age six and increasing each year by one until the highest level of education was achieved. For example, an individual completing high school would be coded starting at age six with one additional year of education until age 18.

Personality disorders were coded as lifetime disorders with onset at age 18. The variance inflation factor (VIF) was used to assess possible collinearity among the variables included in the multivariable models. For all analyses, individuals were censored at the time of remission if remission occurred before seeking treatment. Results are reported as hazard ratios and adjusted hazard ratios with associated 95% confidence intervals (95% CI). Standard errors and 95% CI for all analyses were estimated using SUDAAN to adjust for the complex design of the NESARC.

## 3. Results

### 3.1. Cumulative lifetime probability of treatment-seeking for substance use disorders

Regardless of the timeframe considered (one year after disorder onset, first 10 years after onset, or lifetime), the probability of treatment-seeking was highest for drug dependence followed by alcohol dependence, drug abuse, and alcohol abuse. In the first year after disorder onset, rates of treatment-seeking among individuals who did not remit were 13% for drug dependence, 5% for alcohol dependence, 2% for drug abuse, and 1% for alcohol abuse. After 10 years, the highest rates of seeking treatment continued to be among those with drug dependence (43%) followed by those with alcohol dependence (19%). Less common was the treatment seeking for drug abuse (14%) and for alcohol abuse (5%). The lifetime probability of seeking treatment among individuals who did not remit was also highest for those with drug dependence (90%), followed by drug abuse (60%), alcohol dependence (54%), and alcohol abuse (16%). Among those who sought treatment, the midpoints in the cumulative probability distributions were 12 years for drug dependence, 18 years for alcohol dependence, 20 years for alcohol abuse, and 23 years for drug abuse (Fig. 1).

### 3.2. Univariate Analyses

In the univariate analyses, an increased likelihood of treatment across for all disorders was related to later onset of disorder, belonging to a more recent cohort, having never been married, and having sought treatment previously for another mental or substance use

disorder. Having a change in marital status increased the probability of treatment across all disorders except alcohol abuse, whereas having less than a high school education and being widowed, separated or divorced, increased the probability of treatment for all disorders except for drug dependence. Being Black, Hispanic, or foreign-born increased the likelihood of treatment for alcohol abuse. Males had a greater probability of treatment than females for alcohol abuse, but a decreased probability compared with females of treatment for drug abuse (Table 1).

Most comorbid Axis I disorders increased the probability of treatment for alcohol dependence, drug abuse, and dependence. However, the effect of personality disorders was less consistent. The likelihood of treatment for alcohol abuse was increased by comorbid drug abuse and dependence, major depressive disorder, bipolar disorder, and four personality disorders (avoidant, borderline, histrionic, and antisocial; Table 2).

### 3.3. Multivariable Analyses

After adjusting for the effects of other covariates, fewer factors significantly predicted treatment-seeking. Across all SUDs, having previously sought treatment for another SUD-predicted treatment. In the multivariable models, a history of prior mental health treatment also predicted treatment for alcohol abuse and drug dependence. A later age of onset, having never been married and receiving less than a college education continued to increase the probability of treatment-seeking for alcohol abuse and dependence, but not for drug abuse or dependence.

Younger cohorts had a greater probability of seeking treatment for drug and alcohol abuse, whereas there was no cohort effect for treatment of alcohol or drug dependence. Being widowed, separated, or divorced was associated greater probability of treatment for alcohol abuse and dependence, whereas changes in marital status were associated with lower probability of treatment for alcohol abuse. Male sex was associated with an increased probability for treatment of alcohol abuse but a decreased probability for treatment of alcohol dependence, whereas being Native American was associated with a lower probability of treatment of drug abuse (Table 3).

Among Axis I disorders, alcohol abuse decreased the probability of treatment of drug abuse, whereas alcohol dependence decreased the probability of treatment of drug abuse and dependence. Complementary analyses indicated that among individuals with drug dependence, the adjusted hazard ratio for treatment of drug dependence was 1.04 (95% CI: 0.79, 1.36) among individuals who did not seek treatment for alcohol dependence and 0.58 (95% CI: 0.42, 0.80) among individuals with treated alcohol dependence. Dysthymia increased the probability of treatment of alcohol dependence and drug abuse, comorbid major depressive disorder was associated with greater probability of treatment of alcohol abuse and comorbid bipolar disorder was associated with increased probability of treatment of alcohol abuse and dependence. Comorbid-specific phobia was associated with a lower probability of treatment of alcohol abuse and comorbid pathological gambling with a lower probability of treatment of drug abuse, whereas comorbid PTSD increased the probability of treatment of alcohol dependence.

Among personality disorders, dependent personality disorder increased the probability of treatment of alcohol dependence, schizoid personality disorder was associated with increased treatment of drug abuse, and avoidant personality disorder increased the probability of treatment for drug dependence. By contrast, narcissistic personality disorders lowered the probability of treatment of alcohol abuse and antisocial personality disorder lowered the probability of treatment of drug dependence (Table 4). VIFs for all variables in the multivariable model were less than two, indicating there were not substantial collinearity problems in the estimations.

## 4. Discussion

In a large nationally representative sample, the lifetime probability of treatment-seeking was highest for drug dependence, followed by drug abuse, alcohol dependence, and alcohol abuse. A history of SUD treatment increased the probability of treatment for all SUD disorders while a history of mental health treatment only increased the probability of treatment for alcohol abuse and drug dependence. A later age of onset and not receiving a college education increased the likelihood of treatment for alcohol abuse and dependence. The effects of comorbid psychiatric disorders on treatment-seeking were more complex and varied by disorder.

In keeping with prior US studies (Olfson et al., 1998; Wang et al., 2005), the rates of treatment-seeking were low for the first several years after onset of the disorder for all SUDs. A novel finding of our study was that time to first treatment contact varied substantially across SUD diagnoses in the year after diagnosis and over the lifetime of the individual. There was a lower probability of treatment, regardless of the timeframe considered, for drug dependence followed by alcohol dependence, drug abuse, and alcohol abuse. This ordering is consistent with the extent of their overall impact on quality of life and daily function (Compton et al., 2007; Hasin et al., 2007; Rubio et al., 2014). Symptoms of withdrawal, which are common to dependence but not of abuse criteria (Compton et al., 2007; Hasin et al., 2007; Hedden and Gfroerer, 2011), may also lead to greater perceived need among individuals with substance dependence than abuse and motivate greater treatment-seeking behavior. As compared to individuals with abuse, those with dependence might also experience greater social pressure to seek treatment exerted by family, economic realities, or legally-related consequences of their behavior.

Stigma (Farley-Toombs, 2012), a tendency to externalize responsibility for their behavior (Olfson et al., 1998; Wang et al., 2005), low perceived need for treatment (Mojtabai et al., 2002), and limited availability of treatment facilities (Cummings et al., 2014) may contribute to low treatment-seeking by individuals with SUD. A focus on the short-term euphoric effects of drug use and negligence of longer-term negative consequences may also diminish motivation to seek treatment. In contrast to the dysphoric states that coincide with onset of mood and anxiety disorders, substantial delays may occur in the onset of adverse subjective states in drug use (Arria et al., 2012; Zuvekas and Hill, 2000). It is also possible that treatments for SUD may be perceived as not efficacious as treatments for mental disorder, which may further impede treatment-seeking for SUDs (Mojtabai and Crum, 2012). In

addition, some mental health professionals may be reluctant to treat individuals with SUDs (Moodley-Kunnie, 1988).

In accord with prior research on help seeking for behavioral health care (Christiana et al., 2000; Kessler et al., 1998; Wang et al., 2005), an earlier age of onset tended to decrease the probability of treatment-seeking. Younger individuals often depend on their parents to recognize their symptoms and assist them into care (Dakwar et al., 2014). However, many parents are not aware of the extent and deleterious effects of substance use by their children (Green et al., 2011). Nevertheless, given the strong association of earlier age of onset with greater disorder severity and functional limitations, the lower likelihood of treatment-seeking among younger individuals represents an important challenge for health planners. Higher rates of treatment-seeking among people who were members of more recent cohorts could be due to increased perceived need for treatment among these individuals, less stigma, and greater knowledge of treatment availability or effectiveness (Kessler et al., 1998; Mackenzie et al., 2012; Wang et al., 2005).

Prior treatment of SUDs markedly increased the likelihood of treatment following onset of new SUDs. Familiarity with the treatment system may contribute to treatment seeking when new SUDs arise. By serving as a marker of severity, comorbid SUDs may also increase the likelihood of treatment-seeking (Chiappetta et al., 2014; Compton et al., 2007; Garcia-Rodriguez et al., 2013; Hasin et al., 2007; Rubio et al., 2014, 2013).

A history of mental health treatment was less robustly related to treatment seeking for new SUDs. Pervasive problems exist in integrating substance abuse treatment with other mental health services (Drake et al., 1998, 1996; McGovern and McLellan, 2008; McGovern et al., 2007; Watkins et al., 2005). Screening for SUD remains uneven (Pilowsky and Wu, 2012); some mental health professionals receive only limited training in SUD treatment and/or lack confidence in their ability to treat SUD. Negative perceptions of individuals with SUD may further impede referrals from general mental health to SUD treatment. Although screening, brief intervention, and referral for treatment (SBIRT) models (Babor et al., 2007; Bernstein et al., 2009) have shown some promise, our data suggests that the integration of treatment for SUD and other psychiatric disorders continues to be an area with great opportunities for improving access to care.

Individuals who had not attended college were more likely to seek treatment for alcohol abuse and dependence than their college-educated peers. This contrasts with findings in mood and anxiety disorders (Olfson et al., 2012; Wang et al., 2005), but is in accord with recent findings from the National Survey on Drug Use and Health indicating that socioeconomically less-advantaged groups are more likely to receive treatment for SUD (Cook and Alegria, 2011). A similar education effect was not observed for treatment of drug use and dependence, which might be related to the greater role of mandated treatment in drug versus alcohol use disorders.

The effects of comorbid psychiatric disorders on treatment-seeking for SUD was substantially smaller than previously reported corresponding effects on treatment-seeking for mood (Moreno et al., 2012; Olfson et al., 2012) or anxiety disorders (Iza et al., 2013).

The smaller effects on treatment-seeking for SUD are consistent with a predominance of external factors, rather than internal motivation on treatment-seeking for SUD. In the multivariable models, bipolar disorder increased the likelihood of treatment-seeking for alcohol abuse and dependence, but not for drug abuse or dependence. The reason for these associations may be related to the differences in the pharmacological effects of alcohol and drugs or their effects on bipolar symptoms. It is also possible that alcohol abuse and dependence are perceived as more severe in the presence of mood swings, whereas comorbidity of bipolar disorder does not increase the perceived severity of drug abuse and dependence. Furthermore, individuals with bipolar and alcohol use disorders, which commonly co-occur (Blanco et al., 2002; Hasin et al., 2007; Oquendo et al., 2010), may enter the treatment system through the treatment of bipolar disorder and then be referred for the treatment of their alcohol abuse or dependence, while individuals with bipolar disorder and drug abuse or dependence seek help directly in substance abuse treatment-settings.

Increased probability of treatment-seeking among individuals with avoidant and schizoid personality disorder may be related to their high degree of social isolation (Davis et al., 2013). The reasons for the association between dysthymia and increase treatment-seeking for alcohol dependence and drug abuse, but not for alcohol abuse or drug dependence are less clear and deserve further study.

In the adjusted models, several disorders decreased the likelihood of treatment-seeking. These included specific phobia and narcissistic personality disorder for alcohol abuse as well as alcohol dependence, alcohol abuse for drug abuse, antisocial personality for drug dependence, and alcohol dependence for drug abuse and dependence. Fears regarding the health care system (specific phobias), increased interpersonal sensitivity to rejection (narcissistic personality disorder), comorbidity with other SUD (alcohol abuse and dependence), or a heightened tendency to externalize problems (antisocial personality disorder) may contribute to avoidance of help-seeking. The findings about pathological gambling may be related to the low treatment-seeking rates for this disorder (Blanco et al., 2006).

The findings of this study should be interpreted in light of several limitations. First, as in previous studies of probability of treatment-seeking (Wang et al., 2004; Olfson et al., 2012), information about health insurance coverage, income, and geographic location for each year of the person's life was not available. Second, we examined patterns of treatment-seeking among all individuals with SUD. Because many individuals achieve remission without accessing treatment (Blanco et al., 2013c; Lopez-Quintero et al., 2011), it is possible that some individuals with SUD may not require treatment, although recent data suggest that treatment for SUD increases the probability of remission and decreases the probability of new onset of other SUDs (Blanco et al., 2014a). There is a need to systematically examine how to most appropriately define objective need for the treatment. Third, information on some potentially important determinants of help-seeking, such as local availability of SUD treatment services (Cummings et al., 2014), was not available. Fourth, we based our analyses in DSM-IV categories. Recent work proposes cross-walks between DSM-IV and DSM-5 disorders and suggests different potential thresholds (Compton et al., 2013). Our analyses, indicating that more severe SUD categories are associated with greater likelihood

of treatment suggest that higher thresholds in those cross-walks tend to be associated with greater rates of treatment. Future studies, collecting information on DSM-5 categories should test this prediction. Fifth, to maximize statistical power and increase the stability of the estimates, we examined jointly bipolar I and II disorders, although SUDs are more strongly associated with bipolar I than bipolar II disorder and they may differ in their clinical characteristics, patterns of comorbidity, course, and prognostic implications (Chamorro et al., 2012; Moreno et al., 2012; Sala et al., 2014, 2012). Similarly, we examined all drugs together, although patterns of treatment-seeking may vary by drug.

Seeking help for substance use disorders is a complex process that involves individual, clinical, social, economic, cultural, and, sometimes, legal determinants. We found that greater severity of substance use severity as measured by dependence rather than abuse and having received previous SUD treatment markedly increase the likelihood of seeking treatment for a new SUD. Past treatment of psychiatric disorders modestly increased treatment of alcohol abuse. Early age of SUD onset, belonging to an earlier birth cohort, and receiving higher education all decreased the probability of SUD treatment contact. Psychiatric comorbidity operated in a more complex manner with some disorders increasing and other decreasing the probability of treatment-seeking. Given the high rates of SUD, their substantial toll on the individual and society, and the importance of external rather than internal motivators for treatment, these patterns suggest the need for innovative approaches to increase timely access to care for individuals with SUD.

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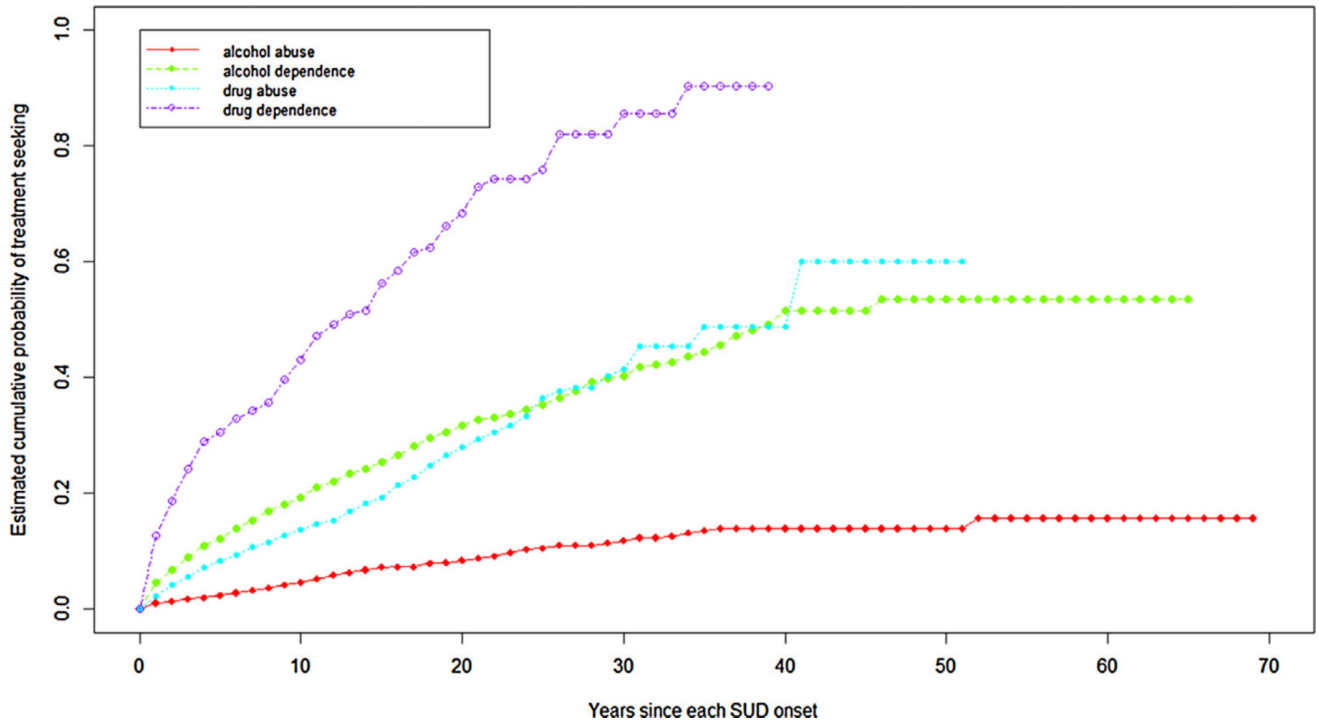


**Fig. 1.**
Cumulative probability of treatment for substance use disorders.

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**Table 1**

Sociodemographic predictors of first treatment contact in individuals with each SUD (univariate analyses).

| Variable | Alcohol abuse (*N* = 5947) | | | Alcohol dependence (*N* = 4863) | | | Drug abuse (*N* = 3228) | | | Drug dependence (*N* = 1062) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | HR | 95% CI | | HR | 95% CI | | HR | 95% CI | | HR | 95% CI | |
| Sex | | | | | | | | | | | | |
| Male | **1.39** | **1.01** | **1.90** | 1.08 | 0.90 | 1.28 | **0.75** | **0.57** | **0.98** | 0.90 | 0.64 | 1.26 |
| Female | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Race/ethnicity | | | | | | | | | | | | |
| White | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Blacks | 1.42 | 0.89 | 2.26 | 1.08 | 0.85 | 1.38 | 0.81 | 0.56 | 1.17 | 0.75 | 0.55 | 1.04 |
| Native | 1.07 | 0.46 | 2.52 | 1.49 | 0.97 | 2.31 | 0.34 | 0.11 | 1.00 | 0.54 | 0.24 | 1.22 |
| Americans | | | | | | | | | | | | |
| Asians | 1.57 | 0.41 | 6.01 | 0.41 | 0.13 | 1.30 | 1.52 | 0.48 | 4.78 | 0.93 | 0.25 | 3.42 |
| Hispanic | **2.28** | **1.46** | **3.56** | 1.06 | 0.81 | 1.38 | 1.40 | 0.96 | 2.04 | 1.05 | 0.66 | 1.67 |
| Nativity | | | | | | | | | | | | |
| US born | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Foreign born | **1.90** | **1.14** | **3.16** | 0.87 | 0.57 | 1.31 | 1.65 | 0.90 | 3.00 | 1.71 | 0.93 | 3.13 |
| Age at onset | **1.06** | **1.04** | **1.08** | **1.05** | **1.04** | **1.06** | 1.02 | 0.99 | 1.05 | **1.05** | **1.02** | **1.08** |
| Educational years | | | | | | | | | | | | |
| 0–11 | **3.76** | **2.18** | **6.47** | **1.75** | **1.28** | **2.39** | **2.08** | **1.18** | **3.65** | 1.01 | 0.53 | 1.92 |
| 12 | **2.22** | **1.41** | **3.50** | **1.67** | **1.30** | **2.14** | 1.40 | 0.80 | 2.43 | 1.14 | 0.67 | 1.95 |
| 13–15 | **1.86** | **1.16** | **2.99** | **1.55** | **1.22** | **1.98** | **1.69** | **1.01** | **2.83** | 1.00 | 0.58 | 1.73 |
| >16 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Cohort | | | | | | | | | | | | |
| 1976–1985 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 1966–1975 | 0.63 | 0.36 | 1.12 | 0.73 | 0.54 | 1.01 | **0.40** | **0.26** | **0.61** | **0.44** | **0.30** | **0.66** |
| 1956–1965 | **0.35** | **0.20** | **0.62** | 0.76 | 0.56 | 1.03 | **0.27** | **0.18** | **0.41** | **0.25** | **0.15** | **0.41** |
| 1946–1955 | **0.23** | **0.13** | **0.40** | **0.62** | **0.45** | **0.86** | **0.13** | **0.07** | **0.22** | **0.17** | **0.09** | **0.32** |
| 1936–1945 | **0.20** | **0.11** | **0.36** | **0.56** | **0.38** | **0.83** | **0.09** | **0.03** | **0.22** | **0.24** | **0.11** | **0.50** |
| 1901–1935 | **0.10** | **0.05** | **0.20** | **0.37** | **0.21** | **0.65** | <0.01 | <0.01 | <0.01 | 0.05 | <0.01 | 0.52 |
| Marital status | | | | | | | | | | | | |

| Variable | Alcohol abuse (*N* = 5947) | | | Alcohol dependence (*N* = 4863) | | | Drug abuse (*N* = 3228) | | | Drug dependence (*N* = 1062) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | HR | 95% CI | | HR | 95% CI | | HR | 95% CI | | HR | 95% CI | |
| Married | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Widowed/separated/divorced | **2.20** | **1.51** | **3.20** | **1.77** | **1.45** | **2.15** | 0.93 | 0.55 | 1.60 | 0.89 | 0.54 | 1.48 |
| Never married | **3.43** | **2.53** | **4.64** | **1.75** | **1.41** | **2.16** | 1.40 | 0.97 | 2.02 | 1.42 | 0.92 | 2.18 |
| Marital transition (any change in marital status) | 1.01 | 0.64 | 1.59 | **1.29** | **1.06** | **1.57** | **1.95** | **1.39** | **2.73** | **1.65** | **1.22** | **2.23** |
| Past substance use disorder treatment | **11.32** | **6.22** | **20.61** | **7.55** | **5.89** | **9.69** | **15.59** | **11.41** | **21.30** | **9.43** | **6.67** | **13.32** |
| Past mental health treatment | **2.57** | **1.67** | **3.95** | **1.84** | **1.51** | **2.24** | **3.02** | **2.10** | **4.35** | **2.32** | **1.67** | **3.23** |

**Table 2**

Comorbidity predictors of first treatment contact in individuals with substance use disorders (univariate analyses).

| | Alcohol abuse (*N* = 5947) | | | Alcohol dependence (*N* = 4863) | | | Drug abuse (*N* = 3228) | | | Drug dependence (*N* = 1062) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **HR** | **95% CI** | | **HR** | **95% CI** | | **HR** | **95% CI** | | **HR** | **95% CI** | |
| Alcohol abuse | N/A | N/A | N/A | 1.02 | 0.62 | 1.68 | **0.44** | **0.27** | **0.71** | 0.77 | 0.46 | 1.30 |
| Alcohol dependence | N/A | N/A | N/A | N/A | N/A | N/A | **1.58** | **1.23** | **2.03** | 1.17 | 0.89 | 1.55 |
| Any drug abuse | **2.37** | **1.52** | **3.70** | **1.66** | **1.34** | **2.05** | N/A | N/A | N/A | 0.90 | 0.66 | 1.24 |
| Any drug dependence | **3.78** | **1.76** | **8.14** | **3.28** | **2.55** | **4.21** | N/A | N/A | N/A | N/A | N/A | N/A |
| Nicotine dependence | 1.22 | 0.82 | 1.81 | **1.46** | **1.22** | **1.73** | **2.05** | **1.43** | **2.94** | 1.31 | 0.96 | 1.77 |
| Mood disorders | **3.02** | **2.02** | **4.51** | **1.94** | **1.58** | **2.37** | **2.70** | **1.93** | **3.77** | **1.85** | **1.36** | **2.51** |
| Dysthymia | 2.36 | 0.62 | 9.00 | **2.02** | **1.48** | **2.76** | **4.15** | **2.38** | **7.24** | **1.71** | **1.08** | **2.71** |
| MDD | **2.17** | **1.22** | **3.86** | **1.48** | **1.14** | **1.94** | **1.89** | **1.19** | **3.00** | 1.28 | 0.81 | 2.01 |
| Bipolar disorder | **4.64** | **2.78** | **7.73** | **2.03** | **1.56** | **2.64** | **2.33** | **1.46** | **3.70** | **1.76** | **1.16** | **2.67** |
| Any anxiety disorder | 0.68 | 0.43 | 1.10 | **1.28** | **1.06** | **1.55** | **1.60** | **1.17** | **2.20** | **1.40** | **1.01** | **1.93** |
| Generalized anxiety disorder | 1.61 | 0.58 | 4.47 | **2.14** | **1.48** | **3.10** | **2.43** | **1.32** | **4.47** | **1.73** | **1.07** | **2.81** |
| Social anxiety disorder | 0.59 | 0.22 | 1.57 | 1.24 | 0.93 | 1.64 | 1.17 | 0.70 | 1.94 | 0.87 | 0.53 | 1.44 |
| Panic disorder | 0.83 | 0.25 | 2.78 | **1.95** | **1.35** | **2.80** | **1.90** | **1.02** | **3.56** | **1.79** | **1.16** | **2.75** |
| Specific phobia | **0.53** | **0.29** | **0.96** | 1.02 | 0.79 | 1.30 | 1.50 | 0.97 | 2.30 | 1.36 | 0.93 | 2.00 |
| PTSD | 1.80 | 0.72 | 4.51 | **1.89** | **1.35** | **2.64** | **2.55** | **1.38** | **4.70** | 1.57 | 0.86 | 2.88 |
| Pathological gambling | 3.28 | 0.43 | 25.38 | 0.70 | 0.23 | 2.13 | <0.01 | <0.01 | <0.01 | 0.66 | 0.16 | 2.74 |
| ADHD | 1.95 | 0.54 | 7.07 | **1.57** | **1.10** | **2.25** | **1.84** | **1.17** | **2.89** | 1.07 | 0.61 | 1.88 |
| Any personality disorder | **1.45** | **1.10** | **1.90** | **1.29** | **1.09** | **1.51** | **1.46** | **1.05** | **2.02** | 1.14 | 0.80 | 1.62 |
| Avoidant | **2.44** | **1.02** | **5.82** | **1.80** | **1.30** | **2.48** | 1.08 | 0.56 | 2.07 | **1.63** | **1.06** | **2.53** |
| Dependant | 2.31 | 0.33 | 16.19 | **3.27** | **1.96** | **5.47** | 0.39 | 0.05 | 3.34 | 1.24 | 0.54 | 2.86 |
| Obsessive–compulsive | 1.01 | 0.62 | 1.63 | 0.95 | 0.74 | 1.22 | 0.98 | 0.64 | 1.51 | 0.64 | 0.40 | 1.04 |
| Paranoid | 1.71 | 0.95 | 3.09 | 1.30 | 0.97 | 1.75 | 1.10 | 0.63 | 1.91 | 0.83 | 0.54 | 1.28 |
| Schizoid | 1.34 | 0.75 | 2.39 | 1.24 | 0.91 | 1.68 | 1.71 | 0.99 | 2.97 | 1.21 | 0.75 | 1.93 |
| Schizotypical | 1.36 | 0.73 | 2.52 | **1.66** | **1.28** | **2.17** | 1.23 | 0.79 | 1.93 | 1.21 | 0.79 | 1.84 |
| Narcissistic | 0.87 | 0.52 | 1.46 | 1.19 | 0.90 | 1.58 | 1.10 | 0.73 | 1.64 | 1.10 | 0.75 | 1.61 |
| Borderline | **2.51** | **1.59** | **3.96** | **1.80** | **1.44** | **2.25** | **1.73** | **1.23** | **2.43** | **1.60** | **1.11** | **2.31** |
| Histrionic | **2.62** | **1.11** | **6.17** | 1.37 | 0.96 | 1.98 | 1.34 | 0.65 | 2.79 | 0.78 | 0.40 | 1.53 |

| Variable | Alcohol abuse (*N* = 5947) | | | Alcohol dependence (*N* = 4863) | | | Drug abuse (*N* = 3228) | | | Drug dependence (*N* = 1062) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | HR | 95% CI | | HR | 95% CI | | HR | 95% CI | | HR | 95% CI | |
| Antisocial | **1.68** | **1.04** | **2.70** | **1.48** | **1.16** | **1.88** | 1.36 | 0.94 | 1.96 | 0.73 | 0.52 | 1.03 |

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**Table 3**

Sociodemographic predictors of first treatment contact in individuals with substance use disorders (multivariable analyses).

| | Alcohol abuse (*N* = 5947) | | | Alcohol dependence (*N* = 4863) | | | Drug abuse (*N* = 3228) | | | Drug dependence (*N* = 1062) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **AHR** | **95% CI** | | **AHR** | **95% CI** | | **AHR** | **95% CI** | | **AHR** | **95% CI** | |
| Sex | | | | | | | | | | | | |
| Male | **1.73** | **1.23** | **2.42** | 1.20 | 0.99 | 1.45 | **0.69** | **0.52** | **0.91** | 0.88 | 0.64 | 1.22 |
| Female | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Race/ethnicity | | | | | | | | | | | | |
| White | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Blacks | 0.91 | 0.57 | 1.46 | 0.88 | 0.68 | 1.13 | 0.88 | 0.57 | 1.37 | 0.69 | 0.46 | 1.02 |
| Native Americans | 0.73 | 0.29 | 1.83 | 1.38 | 0.94 | 2.04 | **0.25** | **0.08** | **0.79** | 0.66 | 0.34 | 1.28 |
| Asians | 0.91 | 0.15 | 5.40 | 0.57 | 0.20 | 1.60 | 1.47 | 0.48 | 4.54 | 1.11 | 0.43 | 2.87 |
| Hispanic | 1.51 | 0.86 | 2.64 | 1.05 | 0.78 | 1.40 | 1.01 | 0.66 | 1.54 | 0.90 | 0.61 | 1.33 |
| Nativity | | | | | | | | | | | | |
| US born | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Foreign born | 1.00 | 0.45 | 2.19 | 0.70 | 0.41 | 1.20 | 1.29 | 0.65 | 2.60 | 1.59 | 0.88 | 2.85 |
| Age at onset | **1.06** | **1.04** | **1.07** | **1.05** | **1.03** | **1.06** | 1.01 | 0.98 | 1.04 | 1.01 | 0.99 | 1.04 |
| Educational years | | | | | | | | | | | | |
| 0–11 | **4.33** | **2.49** | **7.54** | **1.71** | **1.26** | **2.32** | **1.86** | **1.02** | **3.39** | 1.25 | 0.67 | 2.34 |
| 12 | **2.40** | **1.54** | **3.74** | **1.37** | **1.05** | **1.77** | 1.31 | 0.74 | 2.32 | 1.51 | 0.85 | 2.68 |
| 13–15 | **1.98** | **1.28** | **3.06** | 1.25 | 0.97 | 1.61 | 1.26 | 0.74 | 2.14 | 1.30 | 0.76 | 2.22 |
| | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| > 16 | | | | | | | | | | | | |
| Cohort | | | | | | | | | | | | |
| 1976–1985 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 1966–1975 | 0.68 | 0.36 | 1.29 | 0.88 | 0.63 | 1.23 | 0.70 | 0.48 | 1.04 | 0.73 | 0.47 | 1.14 |
| 1956–1965 | **0.40** | **0.21** | **0.74** | 0.96 | 0.68 | 1.34 | **0.49** | **0.31** | **0.77** | **0.46** | **0.28** | **0.78** |
| 1946–1955 | **0.27** | **0.14** | **0.50** | 0.78 | 0.54 | 1.13 | **0.38** | **0.22** | **0.66** | **0.38** | **0.18** | **0.78** |
| 1936–1945 | **0.27** | **0.14** | **0.50** | 0.81 | 0.54 | 1.22 | **0.37** | **0.15** | **0.90** | 1.11 | 0.46 | 2.68 |
| 1901–1935 | **0.12** | **0.06** | **0.25** | 0.66 | 0.40 | 1.11 | <0.01 | <0.01 | <0.01 | 0.26 | 0.03 | 2.09 |
| Marital status | | | | | | | | | | | | |

| | Alcohol abuse (*N* = 5947) | | | Alcohol dependence (*N* = 4863) | | | Drug abuse (*N* = 3228) | | | Drug dependence (*N* = 1062) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **AHR** | **95% CI** | | **AHR** | **95% CI** | | **AHR** | **95% CI** | | **AHR** | **95% CI** | |
| Married | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Widowed/separated/divorced | **2.10** | **1.40** | **3.16** | **1.39** | **1.12** | **1.72** | 0.90 | 0.52 | 1.57 | 0.95 | 0.59 | 1.53 |
| Never married | **2.98** | **2.13** | **4.17** | **1.57** | **1.25** | **1.97** | 1.40 | 0.94 | 2.08 | 1.36 | 0.92 | 2.00 |
| Marital transition (any change in marital status) | **0.58** | **0.34** | **0.97** | 0.93 | 0.76 | 1.15 | 1.41 | 0.99 | 2.00 | 1.03 | 0.76 | 1.39 |
| Past substance use disorder treatment | **6.15** | **3.21** | **11.76** | **5.38** | **4.16** | **6.96** | **12.53** | **9.01** | **17.41** | **10.64** | **7.73** | **14.65** |
| Past mental health treatment | **2.11** | **1.36** | **3.29** | 1.20 | 0.96 | 1.52 | 1.38 | 0.87 | 2.17 | **1.44** | **1.03** | **2.03** |

**Table 4**

Comorbidity predictors of first treatment contact for substance use disorders (multivariable analyses).

| | Alcohol abuse (*N* = 5947) | | | Alcohol dependence (*N* = 4863) | | | Drug abuse (*N* = 3228) | | | Drug dependence (*N* = 1062) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **AHR** | **95% CI** | | **AHR** | **95% CI** | | **AHR** | **95% CI** | | **AHR** | **95% CI** | |
| Any alcohol abuse | N/A | N/A | N/A | 1.00 | 0.65 | 1.54 | **0.51** | **0.31** | **0.84** | 0.60 | 0.36 | 1.01 |
| Any alcohol dependence | N/A | N/A | N/A | N/A | N/A | N/A | **0.62** | **0.47** | **0.82** | **0.59** | **0.45** | **0.77** |
| Any drug abuse | 1.52 | 0.89 | 2.58 | 1.21 | 0.96 | 1.51 | N/A | N/A | N/A | 0.79 | 0.62 | 1.01 |
| Any drug dependence | 0.85 | 0.24 | 3.05 | 1.24 | 0.91 | 1.69 | N/A | N/A | N/A | N/A | N/A | N/A |
| Nicotine dependence | 0.85 | 0.55 | 1.31 | 1.08 | 0.90 | 1.29 | 1.23 | 0.86 | 1.77 | 0.87 | 0.66 | 1.16 |
| Mood disorders | | | | | | | | | | | | |
| Dysthymia | 1.19 | 0.36 | 3.91 | **1.51** | **1.02** | **2.25** | **2.74** | **1.50** | **4.99** | 1.22 | 0.71 | 2.12 |
| MDD | **1.67** | **1.06** | **2.64** | 1.08 | 0.77 | 1.52 | 0.97 | 0.62 | 1.51 | 0.76 | 0.50 | 1.16 |
| Bipolar disorder | **3.95** | **2.26** | **6.92** | **1.45** | **1.09** | **1.94** | 1.36 | 0.80 | 2.33 | 1.27 | 0.89 | 1.82 |
| Any anxiety disorder | | | | | | | | | | | | |
| Generalized anxiety disorder | 0.71 | 0.27 | 1.85 | 0.98 | 0.68 | 1.40 | 0.92 | 0.52 | 1.63 | 1.15 | 0.70 | 1.91 |
| Social anxiety disorder | 0.51 | 0.17 | 1.57 | 0.98 | 0.75 | 1.27 | 0.82 | 0.45 | 1.46 | 0.65 | 0.43 | 1.01 |
| Panic disorder | 0.37 | 0.11 | 1.25 | 1.14 | 0.76 | 1.69 | 0.98 | 0.51 | 1.89 | 1.12 | 0.73 | 1.72 |
| Specific phobia | **0.48** | **0.25** | **0.93** | 0.91 | 0.72 | 1.14 | 1.22 | 0.79 | 1.88 | 1.39 | 0.95 | 2.04 |
| PTSD | 1.22 | 0.56 | 2.68 | **1.43** | **1.05** | **1.96** | 1.02 | 0.56 | 1.86 | 0.79 | 0.45 | 1.40 |
| Pathological gambling | 3.13 | 0.43 | 23.01 | 0.71 | 0.23 | 2.22 | <0.01 | <0.01 | <0.01 | 0.56 | 0.25 | 1.25 |
| ADHD | 1.48 | 0.39 | 5.56 | 1.12 | 0.79 | 1.58 | 0.99 | 0.58 | 1.68 | 0.87 | 0.51 | 1.48 |
| Any personality disorder | | | | | | | | | | | | |
| Avoidant | 0.90 | 0.36 | 2.24 | 0.98 | 0.68 | 1.42 | 1.22 | 0.60 | 2.46 | **1.59** | **1.01** | **2.52** |
| Dependant | 0.74 | 0.08 | 6.45 | **1.90** | **1.09** | **3.33** | 0.26 | 0.03 | 2.50 | 0.73 | 0.30 | 1.77 |
| Obsessive–compulsive | 0.94 | 0.57 | 1.54 | 0.78 | 0.60 | 1.02 | 0.95 | 0.58 | 1.57 | 0.73 | 0.45 | 1.18 |
| Paranoid | 1.11 | 0.56 | 2.22 | 0.94 | 0.68 | 1.29 | 0.77 | 0.41 | 1.45 | 0.99 | 0.64 | 1.53 |
| Schizoid | 1.08 | 0.52 | 2.25 | 1.04 | 0.75 | 1.43 | **1.95** | **1.20** | **3.16** | 1.29 | 0.82 | 2.05 |
| Schizotypical | 0.86 | 0.48 | 1.54 | 0.94 | 0.71 | 1.25 | 0.64 | 0.36 | 1.13 | 0.83 | 0.57 | 1.22 |
| Narcissistic | **0.51** | **0.29** | **0.90** | 0.90 | 0.68 | 1.20 | 0.88 | 0.56 | 1.40 | 0.91 | 0.64 | 1.32 |
| Borderline | 1.33 | 0.77 | 2.31 | 1.15 | 0.89 | 1.48 | 1.49 | 0.99 | 2.24 | 1.18 | 0.79 | 1.77 |
| Histrionic | 1.98 | 0.71 | 5.49 | 1.03 | 0.74 | 1.44 | 0.58 | 0.30 | 1.10 | 0.74 | 0.45 | 1.20 |

| Variable | Alcohol abuse (*N* = 5947) | | | Alcohol dependence (*N* = 4863) | | | Drug abuse (*N* = 3228) | | | Drug dependence (*N* = 1062) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **AHR** | **95% CI** | | **AHR** | **95% CI** | | **AHR** | **95% CI** | | **AHR** | **95% CI** | |
| Antisocial | 1.20 | 0.76 | 1.90 | 1.06 | 0.84 | 1.33 | 0.93 | 0.64 | 1.36 | **0.50** | **0.35** | **0.72** |

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# Probability and predictors of treatment-seeking for prescription opioid use disorders: A National Study

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## Abstract

**Background—**Prescription opioid use disorders are the second most common drug use disorder behind only cannabis use disorders. Despite this, very little is known about the help-seeking behavior among individuals with these disorders.

**Methods—**The sample included respondents of the Wave 2 of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) with a lifetime diagnosis of prescription drug use disorders (N= 623). Unadjusted and adjusted hazard ratios are presented for time to first treatment-seeking by sociodemographic characteristics and comorbid psychiatric disorders.

**Results—**The lifetime cumulative probability of treatment seeking was 42% and the median delay from prescription drug use disorder onset to first treatment was 3.83 years. Having an earlier onset of prescription opioid use disorder and a history of bipolar disorder, major depression disorder, specific phobia and cluster B personality disorders predicted shorter delays to treatment.

**Conclusions—**Although some comorbid psychiatric disorders increase the rate of treatment-seeking and decrease delays to first-treatment contact rates of treatment-seeking for prescription drug use disorder are low, even when compared with rates of treatment for other substance use disorders. Given the high prevalence and adverse consequences of prescription drug use disorder, there is a need to improve detection and treatment of prescription opioid use disorder.

### Keywords

Treatment-seeking; prescription opioid use disorders; substance use disorders; comorbidity



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Contributors
Blanco C designed the study and wrote the first draft of the manuscrip, Iza M managed the literature searches and Wang S conducted the statistical analyses. All authors contributed to and have approved the final manuscript.

Conflict of Interest
No conflict declared.

## 1. INTRODUCTION

Although the therapeutic use of the opioids in the management of pain has long been established and opioids may even be underutilized at times (Ballantyne, 2007; Trescot et al., 2006, 2008) there also is growing concern that over the last two decades, there has been a large increase in the prevalence of prescription opioid use disorders (Blanco et al., 2007; Cicero and Inciardi, 2005; Compton and Volkow, 2006; McCabe, 2005; Rigg and Ibanez; Zacny et al., 2003). It is estimated that the 12-month prevalence of prescription opioid use disorders is 0.30% (Blanco et al., 2007), affecting over one million adults in the US (Grant et al., 2004b). Prescription opioid use disorders represent the second most common drug use disorders, behind only cannabis use disorders, 1.45% (Grant et al., 2004c), and slightly more prevalent as cocaine use disorders, 0.27% (Grant et al., 2004c).

Prescription opioid use disorders are associated with increased risk of several psychiatric and general medical disorders including cardiac arrhythmias and respiratory depression. Prescription opioid use disorders also lead to substantial impairment in daily functioning and an increased risk of premature death (Huang et al., 2006; Kuehn, 2012). In a claims-based analysis of 2 million employees and their dependents, individuals treated for opioid use disorders, including abuse and dependence, incurred 8.7 times greater mean annual direct health care costs than those who were not treated for opioid use disorders ($15,884 vs. $1,830; White et al., 2005). In 2007, total US societal costs of prescription drug use disorder were approximately $55.7 billion (Birnbaum et al., 2011). Despite the rising prevalence and extensive personal burden and societal costs, little is known about the timing and pattern of treatment-seeking for these disorders. A better understanding of the patterns and predictors of treatment-seeking for prescription opioid drug disorders is necessary to identify and address the modifiable barriers to treatment faced by this population (Rogler and Cortes, 1993).

Several studies have examined predictors of treatment-seeking of individuals with psychiatric disorders (Adamson et al., 2003; Alegria et al., 2002; Kessler et al., 2001, 1998; Mojtabai et al., 2002; Olfson et al., 1998; Wang et al., 2005). Among the common mental disorders, substance use disorders have the lowest probability of treatment contact during the first year following disorder onset and the longest delay from onset of the disorder to first treatment contact (Olfson et al., 1998; Wang et al., 2005). In a community sample of adults with substance use disorders, approximately one-half of all lifetime cases had never established treatment contact. Lower rates of treatment for substance use disorders were associated with earlier age of disorder onset, male gender and racial-ethnic minority ancestry (Kessler et al., 2001; Olfson et al., 1998; Perron et al., 2009). Because these studies aggregated all drugs into a single analytic category, the specific patterns associated with prescription opioid use disorders remain unknown. However, prior studies have suggested that the risk factors (Blanco et al., 2007; Huang et al., 2006) and course (Blanco et al., 2012; Martins et al., 2012) of prescription opioid use disorder differ from those of abuse and dependence on illicit drugs (Compton et al., 2007; Lopez-Quintero et al., 2011a, 2011b) suggesting that their pattern of treatment-seeking may also differ.

In the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), approximately one quarter of respondents with prescription opioid use disorder reported having ever received drug abuse treatment at the time of the survey (Blanco et al., 2007). Previous analyses of the NESARC data or other epidemiological surveys have not examined delays to first treatment-contact, identified predictors of treatment-seeking, or estimated cumulative lifetime rates of treatment-seeking for prescription opioid drug disorder. The primary goal of this study was to identify factors associated with delays in time to first treatment seeking for lifetime prescription opioid use disorder. A greater understanding of

these factors may help inform service planning and help identify modifiable barriers to treatment access. Based on prior work (Blanco et al., 2007) we hypothesized that the cumulative rates of treatment-seeking would be less than 50% and that an earlier age of disorder onset (Kessler et al., 1998; Olfson et al., 1998; Wang et al., 2004), male sex, and minority racial/ethnic ancestry (Adamson et al., 2003; Alegria et al., 2002) would predict longer delays to first-treatment contact.

## 2. METHOD

### 2.1 Sample

The target population of the 2004–2005 Wave 2 NESARC (Grant, 2007b, 2007c) was the civilian, non-institutionalized population 18 years and older, residing in households and group quarters (e.g., college quarters, group homes, boarding houses, and non-transient hotels). Blacks, Hispanics, and adults ages 18-24 years were oversampled.

Of the 43,093 respondents interviewed at Wave 1, 34,653 respondents (86.7% of eligible responders) were re-interviewed at Wave 2. Sample weights were developed to adjust for the sampling design as well as Wave 2 non-response. Once weighted, data are representative of the US population for region, age, sex, race, and ethnicity. There were no significant differences between Wave 1 and 2 respondents in terms of several baseline (Wave 1) socio-demographic measures or the presence of any lifetime substance, mood, anxiety or personality disorder (Grant, 2007b).

### 2.2 Assessment

Sociodemographic measures included sex, race-ethnicity (White, Black, Native American, Asian and Hispanic), nativity (US-born versus foreign born), age (as continuous variable), education (less than high school, high school, and college), and marital status (married/cohabiting, widowed/separated/divorced, and never married). The diagnostic interview was the Alcohol Use Disorder and Associated Disabilities Interview Schedule – DSM-IV Version (AUDADIS-IV), Wave 2 version. This structured interview was designed for administration by experienced professional lay interviewers.

Prescription opioid use disorders included DSM-IV abuse or dependence of prescription opioids, as assessed by the AUDADIS. AUDADIS assessment of DSM-IV alcohol and drug-specific abuse and dependence have good to excellent ($\kappa$=0.70-0.91) test-retest reliability (Grant et al., 1995). Mood disorders included DSM-IV major depressive disorder (MDD), bipolar disorder, and dysthymia.

Anxiety disorders included panic disorder, social anxiety disorder (SAD), specific phobia, posttraumatic stress disorder (PTSD), and generalized anxiety disorder (GAD) (Grant et al., 2001, 2009). Test-retest reliabilities for mood and anxiety diagnoses were fair to good ($\kappa$=0.40-0.77; Chatterji et al., 1997; Grant et al., 2003, 2009, 1995; Hasin et al., 1997; Ruan et al., 2008). Wave 1 lifetime personality disorders assessments (Cottler et al., 1997; Grant et al., 2005) included avoidant, dependent, obsessive-compulsive, paranoid, schizoid, histrionic, and antisocial personality disorders and Wave 2 assessments included borderline, schizotypal, and narcissistic personality disorders with test re-test reliability of $\kappa$=0.67-0.71 (Grant et al., 2004a). Respondents were asked a series of DSM-IV personality disorder symptom questions about how they acted throughout their lives in different situations. To receive a DSM-IV diagnosis, respondents had to endorse the requisite number of DSM-IV symptoms for the particular personality disorder and at least one symptom must have caused social or occupational dysfunction. Nationally representative samples seldom assess personality disorders but recent work suggests they have been important predictors of treatment-seeking (Olfson et al., 2012).

Lifetime onset of substance use disorders and other axis I disorders were determined retrospectively by the earliest age in years at which respondents reported meeting criteria for each disorder. Respondents with a lifetime diagnosis of prescription opioid drug use disorder were also asked whether they had ever in their life seen a general medical, mental health, or human service professional for prescription opioid drug use disorders. Affirmative responses were followed by a question to assess the age at which the respondent had first contacted a professional for prescription opioid drug use disorders. These two questions were used to determine the occurrence and timing of first treatment contact.

### 2.3 Statistical analyses

Among respondents with lifetime prescription opioid drug use disorders (N=623), weighted cross-tabulations were used to calculate the proportion who had ever sought treatment for prescription opioid drug use disorder overall and by respondent socio-demographic and clinical characteristics (Table 1).

To assess the effects of sociodemographic and clinical characteristics on time to first prescription opioid treatment seeking, survival analysis with time-varying covariate models were performed. Retrospective follow-up time started at age of prescription opioid drug use disorder onset and terminated at age of first treatment contact. The probability of treatment-seeking was first modeled separately for each individual sociodemographic and diagnostic predictor and again in a single model that controlled for the potentially confounding effects of sex, race/ethnicity, nativity, age at prescription opioid drug use disorder onset, education years, marital status, and each of the diagnostic categories, including alcohol use disorder, drug use disorder, nicotine dependence, dysthymia, MDD, bipolar disorder, SAD, specific phobia, PTSD, GAD, and Cluster A, B and C personality disorders.

Personality disorders, divided in Cluster A, Cluster B and Cluster C, were coded as lifetime disorders with onset at age 18. Results are reported, respectively, as hazard ratios and adjusted hazard ratios with associated 95% confidence intervals (95% CI). Standard errors and 95% CI for all analyses were estimated using SUDAAN to adjust for the complex design of the NESARC (Kirana et al., 2009).

## 3. RESULTS

### 3.1 Lifetime Treatment Seeking for Non Medical Prescription Opioid Use Disorders

Among individuals with prescription opioid drug disorder (N=623), the cumulative probabilities of seeking treatment from the onset of the disorder in the first year (11.1%), first 10 years (24.5%), and ever (42.4%) are represented in Figure 1. The median delay to treatment-seeking among those who sought treatment was 3.83 years. There was no significant difference in rates of treatment-seeking between males and in females (OR: 0.67; CI=0.43-1.04), between Whites compared to Blacks (OR: 0.92; CI=0.47-1.79), Native Americans (OR: 0.80; CI=0.36-2.22), Asians (OR: 0.42; CI=0.05-3.85) or Hispanics (OR: 0.78; CI=0.35-1.73), between US-born compared to foreign-born persons (OR:0.66; CI=0.20-2.20), between adults with a high school education (OR: 1.09; CI=0.65-1.83) or less (OR: 0.73; CI=0.40-1.33) compared to those who attended some college, and between widowed or never married individuals compared to those married (Table 1).

### 3.2 Time to First Treatment

In the unadjusted model, males (HR: 0.58; CI=0.36-0.92) and individuals with an earlier age of onset (HR: 1.13; CI=1.09-1.17) had longer delays to treatment-seeking than females and those with a later onset, respectively, whereas having as opposed to not having an alcohol (HR: 1.97; CI=1.26-3.07) or drug use disorder (HR: 1.93; CI=1.12-3.31), nicotine

dependence (HR: 1.72; CI=1.09-2.71), dysthymia (HR: 2.70; CI=1.38-5.28), MDD (HR: 2.32; CI=1.44-3.75), bipolar disorder (HR: 3.65; CI=2.07-6.42), panic disorder (HR: 3.00; CI=1.55-5.83), specific phobia (HR: 2.11; CI=1.26-3.54), GAD (HR: 3.50; CI=1.97-6.24), or a cluster A (HR: 1.81; CI=1.02-3.22) or B (HR: 2.49; CI=1.52-4.06) personality disorders increased the probability of treatment-seeking.

After adjusting for potentially confounding effects of the other covariates, significantly shorter delays in first prescription opioid drug use disorders treatment seeking were associated with being Asian (HR: 5.22; CI=1.67-16.27) , having an earlier age of onset of prescription drug use disorder (HR: 1.10; CI=1.06-1.14), and a history of comorbid MDD (HR: 2.24; CI=1.29-3.90), bipolar disorder (HR: 2.59; CI=1.44-4.67), specific phobia (HR: 1.84; CI=1.06-3.20) and Cluster B personality disorder (HR: 1.76; CI=1.04-3.00; Table 2).

## 4. DISCUSSION

In a large and nationally representative sample of adults, we estimated that 42% of individuals with prescription opioid use disorders sought treatment for their disorder at some time in their lives. Among those who sought treatment, the median delay from disorder onset to first treatment contact was 3.83 years. Having an earlier onset of prescription opioid use disorder and a history of psychiatric comorbidity including bipolar disorder, MDD, specific phobia or a cluster B personality disorder predicted shorter treatment delays to first treatment contact for prescription opioid use disorder.

We found that the lifetime cumulative probability of treatment-seeking was 42%. Furthermore, 11% of individuals with prescription opioid use disorder sought treatment during the first year after the onset of the disorder and 24% within 10 years following the onset of the disorder. Because our study is the first one to examine the cumulative probability of treatment-seeking among individuals with prescription opioid use disorder, it is not possible to compare our estimates with those of similar studies. However, our results suggest that treatment-seeking rates are low compared to rates for other mental disorders, including to other substance use disorders. For example, Kessler et al. (2001) found that 72% of respondents with lifetime substance use disorders at some point had sought treatment for their symptoms. The NCS-R further revealed that the lifetime cumulative probabilities of treatment-seeking were lower for alcohol abuse (52.7%) dependence (57.0%) and drug abuse (69.8%) dependence (76.9%), than for mood disorders (90.8%; Wang et al., 2005). However, median delay to treatment was shorter than the median treatment delay (6.5 years) documented for substance use disorders in the National Comorbidity Survey Replication (Wang et al., 2005)

The comparatively low treatment rates among individuals with substance use disorders may be due to low perceived need of treatment (Mojtabai et al., 2002), ambivalence about the benefits of treatment (Mojtabai et al., 2002; Wang et al., 2005) and rewarding effects of the drugs themselves. The reasons for the particularly low treatment rates for prescription opioid use disorder are unknown, but may be related to prescription drugs being perceived as less dangerous than illegal drugs or to people's concern that discussing concerns about potential prescription drug misuse with their doctor may endanger future prescriptions. The shorter delay to treatment may also be related to their easier access to the health care system as compared with individuals with other substance use disorders. Regardless of the reason, the strong association between medical and non-medical prescription drug use (Fenton et al., 2010) coupled with our findings, suggests that individuals who are prescribed opioids should be periodically and systematically screened for prescription opioid use disorders. In addition, increasing rates of death from overdose of prescription opioids in the US (Bohnert et al., 2011) suggest that physicians should educate patients and their families about the

dangers of toxic ingestions from recreational use of opioids, the dangers of drug interaction with alcohol and benzodiazepines, and the importance of keeping medications out of the reach of others. Fortunately, a recent multi-site randomized trial of buprenorphine treatment for prescription opioid use disorder (Weiss et al., 2010) has provided clinicians and patients with new effective ways for treating this disorder.

We also found that several comorbid psychiatric disorders, including MDD, bipolar disorder or specific phobia, increased the probability of treatment-seeking and decreased delays to first-treatment contact for prescription opioid use disorders. MDD and bipolar disorder are each associated with high rates of psychosocial disability, suicidal ideation and attempts (Judd et al., 2005), unemployment (Tse and Walsh, 2001) and increased use of mental health services (Judd et al., 2005), which may contribute to the clinical detection and treatment of a prescription opioid use disorders. The reasons that comorbid specific phobia also increases prescription opioid use disorders treatment seeking are not known, but this finding is consistent with recent results from the World Mental Health Survey suggesting that specific phobia is an important predictor of later-onset internalizing disorders and may be an early-onset marker for further psychopathology (Kessler et al., 2011). It is possible that the impairment associated with specific phobia increases the likelihood of treatment seeking for prescription opioid use disorders.

Cluster B personality disorders (narcissistic, borderline, histrionic, and antisocial) were also associated to shorter delays to treatment. The more emotional (American Psychiatric Association, 2000) and action-oriented pattern behavior (Fossati et al., 2007) associated with these personality disorders may lead to lower tolerance regarding the symptoms derived from the prescription opioid use disorders and higher perceived need for treatment. Cluster B personality disorders have also been associated with greater severity of substance use (Gibbie et al., 2011) which would also increase the objective need for treatment.

A notable finding of this study was that earlier age of onset of prescription opioid use disorder was associated with a shorter delay to treatment, in contrast with findings in other disorders (Kessler et al., 2001; Vaingankar et al., 2012; Wang et al., 2005, 2004). It is possible that this finding is due to greater contact with the health system among individuals with prescription opioid use disorders. It may also be related to lower degrees of perceived stigma associated with prescription opioid use compared to illicit drug use disorders (Subramaniam et al., 2009). Because pain is more common at older ages, young individuals using prescription opioids may also be acutely aware of the unusual pattern of behavior represented by the need to take opioid analgesic medication from a young age. They may also be more concerned than older-onset individuals about the potential for hyperalgesia that may be associated with long-term use of opioids (Angst and Clark, 2006; Chu et al., 2008).

Our findings have clinical and public health implications. From the clinical point of view, our findings highlight the need when prescribing opioids to balance the needs to alleviate pain with the increased risk of substance dependence. Systematic clinical assessments at baseline of known risk factors for prescription opioid use disorder (Huang et al., 2006; Blanco et al., 2007; Martins et al., 2011), use of evidence-based clinical practice guidelines (Manchikanti et al., 2012), periodic reassessment of other treatment options, and use of well-established measures such as the Current Opioid Misuse Measure (COMM; Chou et al., 2009; Meltzer et al., 2011) can all contribute to optimize the use of prescription opioids and minimize their associated risks.

From the public health point of view, there is a need to train clinicians in appropriate use of opioids to avoid underuse, overuse or the possibility of medication diversion. Educating patients and the general public about the short- and long-term risk and benefits of

prescription opioids and the need to avoid their use by individuals to whom these medications were not prescribed may also help to decrease the rate adverse events associated with prescription opioids and save lives. The low rate of treatment-seeking documented by this study also indicates the need to facilitate treatment access for those patients. Due to complex management required for many of these patients, a better integration of primary care, mental health and substance abuse treatment seems essential for the appropriate care. Educating clinicians and patients about the medical rather moral nature of prescription opioid use disorder and the availability and efficacy of its treatment may contribute to increase treatment-seeking.

This study has several limitations. First, as in previous studies of time to treatment-seeking, information about health insurance coverage, income, and geographic location for each year of the person's life was not available, which may have led to an overestimate of the effect of some of the predictors included in the study. Second, self-report of health care-seeking may be underreported, due to the stigma associated with mental health problems and treatment (Pickles et al., 1998). Third, disorder onset and past treatment may be recalled as occurring more recently than it actually occurred (Wang et al., 2005), which may have led to an underestimate to the delay for treatment.

Only a minority of individuals with prescription opioid use disorder receives treatment. The growing prevalence of prescription opioid use disorder (Blanco et al., 2007; Howard et al., 2009), and its association with psychosocial impairment (Huang et al., 2006), overdose death (Bohnert et al., 2011), and substantial health care costs, make it desirable to improve the detection of prescription opioid use disorders to facilitate access to treatment and more integrated care.

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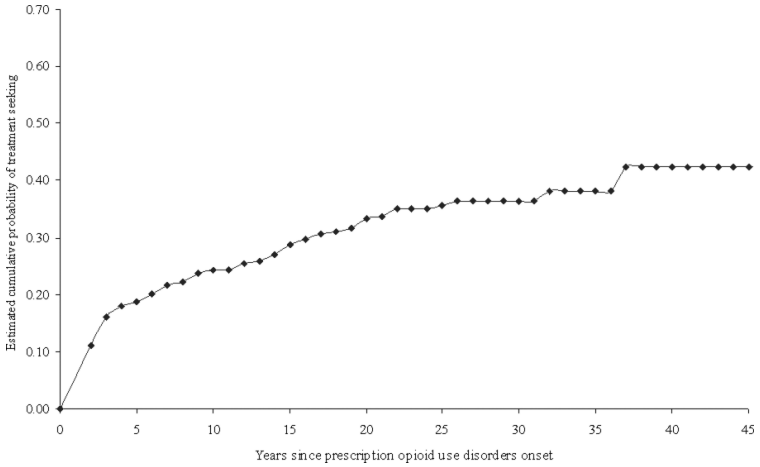


**Figure 1.**
Cumulative probability of treatment-seeking among individuals with prescription opioid use disorder in the NESARC Wave 2 (n= 623).

*Drug Alcohol Depend*. Author manuscript; available in PMC 2014 July 01.

**Table 1**

Descriptive statistics of lifetime treatment seeking among individuals with prescription opioid use disorder, stratified by characteristics at time of assessment disorder[a]

| | N | % Seeking Treatment | SE | Odds Ratio | 95% CI | |
|---|---|---|---|---|---|---|
| **Total** | 623 | 29.20 | 2.15 | | | |
| **Sex** | | | | | | |
| Male | 351 | 26.24 | 2.68 | 0.67 | 0.43 | 1.04 |
| Female | 272 | 34.71 | 3.73 | 1.00 | 1.00 | 1.00 |
| **Race/Ethnicity** | | | | | | |
| White (ref) | 430 | 30.23 | 2.39 | 1.00 | 1.00 | 1.00 |
| Black | 69 | 28.45 | 6.46 | 0.92 | 0.47 | 1.79 |
| Native Americans | 29 | 27.79 | 9.02 | 0.89 | 0.36 | 2.22 |
| Asian | 9 | 15.40 | 14.49 | 0.42 | 0.05 | 3.85 |
| Hispanic | 86 | 25.17 | 7.29 | 0.78 | 0.35 | 1.73 |
| **Nativity** | | | | | | |
| US-born (ref) | 594 | 29.52 | 2.18 | 1.00 | 1.00 | 1.00 |
| Foreign-born | 29 | 21.78 | 10.10 | 0.66 | 0.20 | 2.20 |
| **Educational years** | | | | | | |
| Less than high school | 99 | 23.43 | 4.58 | 0.73 | 0.40 | 1.33 |
| High school | 182 | 31.45 | 4.16 | 1.09 | 0.65 | 1.83 |
| College (ref) | 342 | 29.66 | 3.28 | 1.00 | 1.00 | 1.00 |
| **Marital Status** | | | | | | |
| Married | 281 | 27.16 | 2.77 | 1.00 | 1.00 | 1.00 |
| Widowed/ separated/ divorced | 187 | 32.60 | 4.33 | 1.30 | 0.80 | 2.10 |
| Never Married | 155 | 30.46 | 3.99 | 1.17 | 0.77 | 1.80 |
| | | **Mean** | **t-test** | **p** | | |
| **Age at prescription opioid use disorder onset** | 623 | 27.80 | 1.20 | -0.27 | | |

b. (ref)= reference group.

[a]Data from NESARC Wave 2.

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## Table 2

Survival analysis of sociodemographic characteristics on the time to seeking treatment for major depressive disorder, unadjusted and adjusted analyses[a,b]

| | Unadjusted HR | 95%CI | | Adjusted HR[c] | 95%CI | |
|---|---|---|---|---|---|---|
| **Sex** | | | | | | |
| Male | **0.58** | **0.36** | **0.92** | 0.68 | 0.42 | 1.08 |
| Female | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| **Race/Ethnicity** | | | | | | |
| White (ref) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Black | 0.83 | 0.43 | 1.61 | 0.70 | 0.38 | 1.30 |
| Native Americans | 0.52 | 0.18 | 1.54 | 0.81 | 0.34 | 1.91 |
| Asian | 3.08 | 0.91 | 10.45 | **5.22** | **1.67** | **16.27** |
| Hispanic | 1.33 | 0.50 | 3.52 | 0.81 | 0.35 | 1.88 |
| **Nativity** | | | | | | |
| US-born (ref) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Foreign-born | 2.33 | 0.72 | 7.50 | 1.49 | 0.49 | 4.52 |
| **Age at prescription opioid use disorder onset** | **1.13** | **1.09** | **1.17** | **1.10** | **1.06** | **1.14** |
| **Educational years**[d] | 1.01 | 0.94 | 1.10 | 0.99 | 0.90 | 1.10 |
| **Marital Status**[d] | | | | | | |
| Married | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Widowed/ separated/ divorced | 1.54 | 0.87 | 2.74 | 0.98 | 0.54 | 1.78 |
| Never Married | 1.33 | 0.80 | 2.22 | 1.15 | 0.70 | 1.88 |
| **Lifetime Comorbidity**[d] | | | | | | |
| Alcohol Use Disorder | **1.97** | **1.26** | **3.07** | 1.44 | 0.97 | 2.15 |
| Drug Use Disorder | **1.93** | **1.12** | **3.31** | 1.30 | 0.83 | 2.03 |
| Nicotine Dependence | **1.72** | **1.09** | **2.71** | 1.32 | 0.84 | 2.07 |
| Dysthymia | **2.70** | **1.38** | **5.28** | 1.30 | 0.62 | 2.74 |
| Major Depressive Disorder | **2.32** | **1.44** | **3.75** | **2.24** | **1.29** | **3.90** |
| Bipolar Disorder | **3.65** | **2.07** | **6.42** | **2.59** | **1.44** | **4.67** |
| Panic disorder | **3.00** | **1.55** | **5.83** | 1.18 | 0.62 | 2.24 |
| Social Anxiety Disorder | 1.60 | 0.74 | 3.46 | 0.58 | 0.24 | 1.38 |

| | Unadjusted HR | 95%CI | | Adjusted HR[c] | 95%CI | |
|---|---|---|---|---|---|---|
| Specific Phobia | **2.11** | **1.26** | **3.54** | **1.84** | **1.06** | **3.20** |
| Posttraumatic Stress Disorder | 1.75 | 0.91 | 3.37 | 0.90 | 0.44 | 1.85 |
| Generalized Anxiety Disorder | **3.50** | **1.97** | **6.24** | 1.49 | 0.73 | 3.04 |
| ClusterA | **1.81** | **1.02** | **3.22** | 1.17 | 0.67 | 2.05 |
| ClusterB | **2.49** | **1.52** | **4.06** | **1.76** | **1.04** | **3.00** |
| ClusterC | 1.26 | 0.74 | 2.16 | 0.67 | 0.38 | 1.18 |

[a]Data from NESARC.

[b]Significant results are in bold.

[c]Adjusted HR is adjusted for sex, race, nativity, age at prescription opioid use disorder onset, education years, marital status, and comorbid disorders.

[d]Time-varying variable. (ref)= reference group.

# Pain as a Predictor of Opioid Use Disorder in a Nationally Representative Sample

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**Objective:** The authors sought to ascertain the relationship between moderate and more severe pain and prescription opioid use disorders in the noninstitutionalized U.S. population.

**Method:** A structural equation model was used to assess prospectively the interdependency of pain and prescription opioid use disorder at waves 1 (2001–2002) and 2 (2004–2005) of the National Epidemiologic Survey on Alcohol and Related Conditions. Pain was measured with a 5-point scale of pain-related interference in daily activities and dichotomized as "no pain" (no or little interference) or "pain" (moderate to extreme interference). Prescription opioid use disorder was assessed with a structured interview (the Alcohol Use Disorder and Associated Disabilities Interview Schedule–DSM-IV version). Other covariates included age, sex, anxiety or mood disorders, and family history of drug, alcohol, and behavioral problems.

**Results:** In the structural equation model, pain and prescription opioid use disorders were significantly associated with one another at baseline and at 3-year follow-up. However, whereas pain at baseline was also significantly associated with prescription opioid use disorder at follow-up, prescription opioid use disorder at baseline was not associated with pain at follow-up. These associations were independent of several background demographic and clinical characteristics. The path for pain interference was associated with a 41% relative increase in the risk of developing a prescription opioid use disorder.

**Conclusions:** Painful conditions contribute to the risk of prescription opioid use disorders. To help reduce the incidence of prescription opioid abuse and dependence among adults with moderate to severe pain, careful monitoring and consideration of nonopioid alternative treatments is warranted.

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The high prevalence of chronic pain and increases in the prevalence and adverse events associated with opioid prescriptions have brought to the fore the need to examine the relationship between chronic pain and prescription opioid use disorders (1, 2). Pain is a prevalent condition, with recent estimates suggesting that chronic pain affects approximately one-third of the U.S. population and constitutes one of the most common symptoms for which patients seek medical attention (3). It is associated with intense personal suffering, high rates of disability, and an annual economic burden surpassing half a trillion dollars due to costs of medical treatment and productivity losses (4).

Concerns about undertreatment of pain have led to growth in opioid prescriptions and an increase in the prevalence of prescription opioid use disorders, which themselves pose risks of premature mortality (5, 6). Despite the clinical, public health, and policy relevance of prescription opioid use disorder, little is known about its relationship to pain. Information about these relationships bears directly on the development of guidelines and legislation to ensure the safe treatment of pain and minimize the risk of addiction to prescription opioids (7, 8). Several cross-sectional studies have indicated that pain is associated with an increased risk of prescription opioid use disorders (9, 10), and concerns have been raised that individuals with opioid use disorders may develop abnormal pain sensitivity or hyperalgesia (11). Surprisingly, however, no study has examined prospectively the relationship between pain and prescription opioid use disorders in a nationally representative sample.

We sought to address this gap in knowledge with prospective data from the National Epidemiological Survey on Alcohol and Related Conditions (NESARC), a large, nationally representative sample. We examined whether the presence of pain increased the risk of developing a prescription opioid use disorder 3 years later and, conversely, whether prescription drug use disorders increased the subsequent risk of developing pain, after adjusting for several relevant demographic and clinical covariates.

*See related features:* **Editorial** *by Dr. Kashner (p. 1161),* **Clinical Guidance** *(Table of Contents),* **CME course** *(p. 1253),* **AJP Audio** *(online), and* **Video** *by Dr. Pine (online)*

## METHOD

### Sample

The 2001–2002 NESARC (wave 1), and the 2004–2005 follow-up (wave 2), is a nationally representative survey of the noninstitutionalized adult U.S. population conducted by the U.S. Census Bureau under the direction of the National Institute on Alcoholism and Alcohol Abuse, as described elsewhere (12–14). The wave 1 response rate was 81%. Excluding ineligible respondents (e.g., deceased), the wave 2 response rate was 86.7%, resulting in a cumulative response rate of 70.2% (N=34,653). Wave 2 NESARC weights include a component that adjusts for nonresponse, demographic factors, and psychiatric diagnoses to ensure that the wave 2 sample approximated the target population, that is, the original sample minus attrition between the two waves (12).

### Assessment

All diagnoses for waves 1 and 2 were made using the Alcohol Use Disorder and Associated Disabilities Interview Schedule–DSM-IV version (AUDADIS-IV) (15). Consistent with previous reports, nonmedical use of a prescription opioid was defined as using a prescription drug "without a prescription, in greater amounts, more often, or longer than prescribed, or for a reason other than a doctor said you should use them" during the 12 months preceding the interview. More than 30 symptom items are used by the AUDADIS-IV to define 12-month prescription opioid use disorders (abuse or dependence) according to DSM-IV criteria. The NESARC also collected information for other substance use disorders (nicotine dependence, alcohol use disorders, and drug use disorders, including other prescription drug use disorders). The reliability of the AUDADIS-IV prescription opioid use questions (kappa=0.66) and that of associated substance use disorder diagnoses (kappa values, 0.53–0.84) are well documented in both clinical (16) and general population (17) samples. The prescription opioid use disorder diagnosis also has established concurrent and predictive validity related to impairment and treatment seeking (18).

Mood disorders included major depressive disorder, dysthymia, bipolar I disorder, and bipolar II disorder. Anxiety disorders included panic disorder, social anxiety disorder, specific phobia, and generalized anxiety disorder. AUDADIS-IV methods to diagnose these disorders have been described in detail elsewhere (19). Test-retest reliabilities for AUDADIS-IV mood, anxiety, and personality disorders in the general population and in clinical settings were fair to good. Convergent validity was good to excellent for all mood, anxiety, and personality disorder diagnoses, showing good agreement with psychiatrist reappraisals (kappa values, 0.64–0.68) (20). As in our previous work (21), family histories of alcohol use disorders, drug use disorders, antisocial personality disorder, and depression were sought for first-degree relatives and were also assessed with the AUDADIS-IV, using readily observable manifestations of the disorders. The test-retest reliability for AUDADIS family history variables is very good to excellent (14).

### Assessment of Pain

Consistent with previous national studies (4), pain was assessed using the pain item of the Medical Outcomes Study 12-item Short-Form Health Survey (SF-12) (22), a valid measure that is commonly used in population surveys and is sensitive to change (23, 24). The pain item measures the amount to which pain interfered with daily activities during the past month, on a 5-point scale (not at all, a little bit, moderately, quite a bit, and extremely) (25). The pain measure was collapsed into two levels to indicate whether pain was associated with no or little interference ("no pain") or moderate to extreme interference ("pain") (2). In preliminary analyses, pain interference was associated with lower scores on each of the other 11 items of the SF-12 (all p values, $<0.001$) and increased the likelihood of all medical conditions assessed in the NESARC (odds ratios, 2.8–7.6; all p values, $<0.001$). This confirmed previous analyses indicating that greater interference of the SF-12 pain item was associated with higher health care expenditures, more missed days of work, lower productivity (4), and greater probability and frequency of nonmedical use of prescription drugs, even after adjusting for multiple comorbidities (9).

### Statistical Analysis

Wave 1 descriptive demographic and clinical characteristics were compared between individuals with and without pain and between individuals with and without a prescription opioid use disorder. Group differences were evaluated with chi-square or t tests.

In separate analyses, odds ratios and adjusted odds ratios, controlling for age, sex, other substance use disorders, and mood or anxiety disorders at wave 1, were then used to assess the strength of associations at wave 1 between pain severity and prescription opioid use disorder.

We built our model for the prospective relationship between pain and prescription opioid use disorder in two steps. First, a series of logistic regression models were used to examine whether pain at wave 1 was associated with the prevalence and incidence of prescription opioid use disorders at wave 2 and whether prescription drug use disorder at wave 1 was associated with the prevalence and incidence of pain at wave 2. Incidence was defined as the number of new cases reported between wave 1 and wave 2. Exploratory analyses examined whether there were any interactions between time of pain assessment (wave 1 versus wave 2) and likelihood of prescription drug use disorders at wave 2. All logistic regression models were adjusted for age, sex, other substance use disorders, and mood or anxiety disorders at wave 1, which have been shown to be associated both with pain (2–4) and with prescription opioid use disorders (26, 27). In addition, the prevalence models adjusted for current prescription opioid use disorder or level of pain at wave 1, as appropriate.

In the second step, because of the bidirectional relationship between pain and prescription opioid use disorders, we used structural equation models to model the interdependency between pain and prescription opioid use

**TABLE 1. Background Characteristics of NESARC Respondents, by Prescription Opioid Use Disorder and Pain Interference Status at Wave 1[a]**

| Characteristic | Prescription Opioid Use Disorder | | | | | | Pain Interference | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Present (N=104) | | Absent (N=34,549) | | t or $\chi^2$ | p | Present (N=6,943) | | Absent (N=27,522) | | t or $\chi^2$ | p |
| | Mean | SD | Mean | SD | | | Mean | SD | Mean | SD | | |
| Age at wave 1 (years) | 35.19 | 14.41 | 45.11 | 17.33 | −6.01 | <0.001 | 51.77 | 17.70 | 43.53 | 16.88 | 23.53 | <0.001 |
| | % | N | % | N | | | % | N | % | N | | |
| Sex | | | | | 6.15 | 0.02 | | | | | 75.15 | <0.001 |
| Male | 63.48 | 58 | 47.87 | 14,506 | | | 41.56 | 2,477 | 49.38 | 12,008 | | |
| Female | 36.52 | 46 | 52.13 | 20,043 | | | 58.44 | 4,466 | 50.62 | 15,514 | | |
| Family history | | | | | | | | | | | | |
| Alcohol use disorders | 61.21 | 57 | 34.38 | 12,193 | 12.20 | <0.001 | 42.00 | 2,943 | 32.93 | 9,294 | 112.06 | <0.001 |
| Drug use disorders | 30.05 | 33 | 16.61 | 5,939 | 6.30 | 0.01 | 20.79 | 1,461 | 15.77 | 4,500 | 51.65 | <0.001 |
| Depression | 52.44 | 57 | 32.58 | 11,076 | 9.78 | 0.003 | 38.18 | 2,543 | 31.55 | 8,578 | 68.69 | <0.001 |
| Antisocial personality disorder | 34.35 | 34 | 17.87 | 6,177 | 6.61 | 0.01 | 21.86 | 1,493 | 17.12 | 4,714 | 43.78 | <0.001 |
| Any other 12-month substance use disorder | 74.53 | 76 | 18.12 | 5,912 | 33.20 | <0.001 | 21.82 | 1,385 | 17.61 | 4,600 | 36.08 | <0.001 |
| Any 12-month mood or anxiety disorder | 50.39 | 54 | 16.10 | 5,873 | 18.44 | <0.001 | 24.57 | 1,748 | 14.38 | 4,172 | 153.55 | <0.001 |

[a] NESARC=the National Epidemiologic Survey on Alcohol and Related Conditions. Pain interference denotes moderate to extreme interference.

disorders at waves 1 and 2. Jointly modeling pain and prescription use disorders avoids simultaneous equation bias (28), which can result when they are modeled in separate, unlinked regressions. Because the prevalence of pain and prescription drug use disorders, along with several covariates in the model, differs by sex (3, 29), we used multiple group structural equation model analyses to examine whether the model was invariant by sex, comparing a model with all parameters free to differ across sex to one in which they were all the same. Invariance was determined by finding this chi-square difference test nonsignificant ($p>0.05$). Additional structural equation models were examined substituting specific criteria (tolerance and withdrawal) or an indicator of using prescription opioids longer or at greater doses than prescribed for prescription opioid use disorder at wave 2. Logistic regression models were fitted and adjusted odds ratios estimated with 95% confidence intervals using SUDAAN. The structural equation models were fitted with standardized probit regression coefficients and p values in Mplus, using weighted least squares, an estimator that is robust for nonnormality. Because the structural equation models being estimated were fully saturated (i.e., all cross-sectional and longitudinal associations between pain and prescription opioid use disorder at both waves were freely modeled such that the degrees of freedom was zero), standard structural equation model fit statistics provide no additional information. Both SUDAAN and Mplus take into account the complex design features of the NESARC.

## RESULTS

### Bivariate Associations

At wave 1, the prevalence of pain was 18.76% (N=6,943) and the prevalence of prescription opioid use disorders was 0.33% (N=104). Individuals with prescription opioid use disorders were younger than those without, were more likely to be male, and were more likely to have another current substance use disorder, a mood or anxiety disorder, and a family history of alcohol use disorders, drug use disorders, depression, and antisocial personality disorder. Individuals with pain were more likely to be older than those without and were more likely to be female, but they were also more likely than those without pain to have a current substance use disorder, a mood or anxiety disorder, and a family history of alcohol use disorders, drug use disorders, depression, and antisocial personality disorder (Table 1).

Pain was reported by 38.27% of individuals with prescription opioid use disorders and 18.69% of those without (odds ratio=2.70, 95% CI=1.66–4.39). After adjustment for the background demographic and clinical characteristics, a strong association persisted between prescription opioid use disorder and pain (adjusted odds ratio=2.38, 95% CI=1.51–3.76).

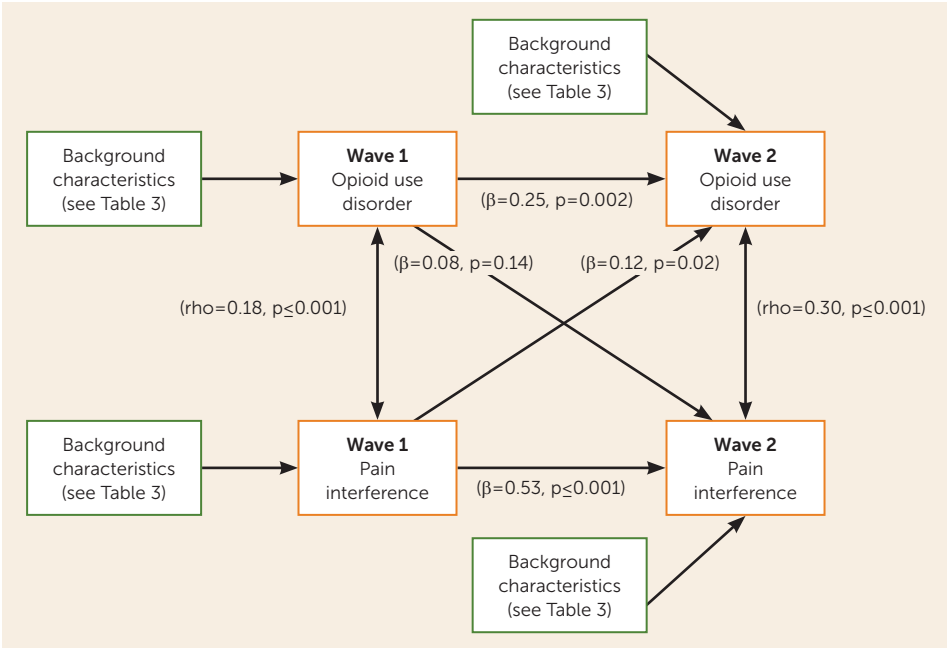
Logistic regression models indicated that pain at baseline was associated with both prevalence (odds ratio=2.05, 95% CI=1.33–3.18) and incidence (odds ratio=2.15, 95% CI=1.37–3.37) of prescription opioid use disorders, and the odds did not significantly change after adjustment for demographic and clinical covariates (adjusted odds ratio=2.17, 95% CI=1.35–3.48, and adjusted odds ratio=2.26, 95% CI=1.40–3.65, respectively). By contrast, while a prescription opioid use disorder at baseline was associated with prevalence of pain at wave 2 (odds ratio=1.84, 95% CI=1.04–3.25), it was not significantly associated with incidence (odds ratio=1.78, 95% CI=0.75–4.24), and neither association was significant after adjustment for demographic and clinical covariates (adjusted odds ratio=1.72, 95% CI=0.95–3.13, and adjusted odds ratio=1.90, 95% CI=0.76–4.70, respectively) (Table 2). There were no significant interactions between

**TABLE 2. Prospective Associations of the Prevalence and Incidence of Pain Interference and Prescription Opioid Use Disorders in the NESARC[a]**

| Association | Odds Ratio | 95% CI | Adjusted Odds Ratio[b] | 95% CI |
|---|---|---|---|---|
| Wave 1 prescription opioid use disorder predicting: | | | | |
| Prevalence of wave 2 pain interference | 1.84 | 1.04–3.25 | 1.72 | 0.95–3.13 |
| Incidence of pain interference | 1.78 | 0.75–4.24 | 1.90 | 0.76–4.70 |
| Wave 1 pain interference predicting: | | | | |
| Prevalence of wave 2 prescription opioid use disorder | 2.05 | 1.33–3.18 | 2.17 | 1.35–3.48 |
| Incidence of prescription opioid use disorder | 2.15 | 1.37–3.37 | 2.26 | 1.40–3.65 |

[a] NESARC=National Epidemiologic Survey on Alcohol and Related Conditions.
[b] Adjusted for age, sex, other substance use disorders, and any mood or anxiety disorder at wave 1. The prevalence models were also adjusted by current prescription opioid use disorder, pain interference, and number of disorders at wave 1.

**FIGURE 1. Pathways From Opioid Use Disorder and Pain Interference, NESARC Wave 1 (2001–2002) to Wave 2 (2004–2005)[a]**




[a] NESARC=National Epidemiologic Survey on Alcohol and Related Conditions. Pain interference denotes moderate to extreme interference; opioid use disorder denotes prescription opioid use disorders.

time of pain assessment and likelihood of prescription drug use disorder at wave 2 either in unadjusted models (odds ratio=0.96, 95% CI=0.39–2.38) or in models that adjusted for age, sex, other substance use disorders, or any mood or anxiety disorder at wave 1 (odds ratio=0.99, 95% CI=0.40–2.50).

### Structural Equation Model

In the model, which adjusted for demographic and clinical characteristics, prescription opioid use disorder and pain at wave 1 each were associated with themselves at wave 2 (for wave 1 pain with wave 2 pain, β=0.53, p<0.001; for wave 1 opioid use disorder with wave 2 opioid use disorder, β=0.25, p=0.002). Moreover, the adjusted correlation between pain and opioid use disorder was substantial at both wave 1 and wave 2. However, whereas prescription opioid use disorder at wave 1 did not lead to pain at wave 2, pain at wave 1 led to prescription opioid use disorder at wave 2 (Figure 1, Table 3). The predicted risk of developing wave 2 prescription opioid use disorder was 0.44% for persons without and 0.62% for those with wave 1 pain interference, an increase of 41% (data not shown). The model was invariant by sex ($\chi^2$=46.64, df=34, p=0.07). Post hoc analyses indicated that pain at wave 1 was significantly associated with opioid tolerance (β=0.17, p=0.002) and withdrawal (β=0.24, p<0.001) at wave 2, and the association approached significance for taking opioids longer or at greater doses than prescribed (β=0.12, p=0.07).

Having a mood or anxiety disorder or family history of alcohol use disorder or antisocial personality disorder at wave 1 was associated with pain and prescription opioid use disorder at wave 1. A family history of drug use disorders was further associated with pain at wave 1. In the structural model, age and sex were associated with both prescription opioid use disorder and pain at wave 1, but in opposite directions. Whereas male sex was directly associated and age inversely associated with prescription opioid use disorder, age was directly associated and male sex inversely associated with pain at wave 1. A family history of antisocial personality disorder at wave 1 was also associated with prescription opioid use disorder at wave 2. Having a mood or anxiety disorder and having a family history of alcohol use disorder or a depression disorder at wave 1 was directly associated and male sex inversely associated with pain at wave 2. Age continued to be directly associated with pain and inversely associated with prescription opioid use disorder at wave 2 (Table 3).

## DISCUSSION

In a nationally representative sample assessed twice 3 years apart, pain and prescription opioid use disorders were associated with one another at both time points. However,

**TABLE 3. Structural Model Correlations and Probabilities of Background Demographic and Clinical Characteristics With Prescription Opioid Use Disorder and Pain Interference at NESARC Waves 1 and 2[a]**

| | Wave 1 | | | | Wave 2 | | | |
|---|---|---|---|---|---|---|---|---|
| | Prescription Opioid Use Disorder | | Pain Interference | | Prescription Opioid Use Disorder | | Pain Interference | |
| Characteristic | β | p | β | p | β | p | β | p |
| Age | −0.13 | 0.002 | 0.29 | <0.001 | −0.22 | <0.001 | 0.18 | <0.001 |
| Male | 0.09 | 0.02 | −0.06 | <0.001 | 0.07 | 0.07 | −0.03 | 0.01 |
| Family history | | | | | | | | |
| Alcohol use disorder | 0.10 | 0.04 | 0.04 | <0.001 | 0.05 | 0.16 | 0.03 | 0.007 |
| Drug use disorder | −0.01 | 0.72 | 0.03 | 0.006 | 0.04 | 0.29 | 0.001 | 0.95 |
| Depression | 0.03 | 0.50 | 0.01 | 0.24 | 0.06 | 0.20 | −0.004 | 0.69 |
| Antisocial personality disorder | −0.002 | 0.95 | 0.02 | 0.06 | −0.03 | 0.38 | 0.03 | 0.004 |
| Other 12-month substance use disorder[b] | 0.24 | <0.001 | 0.09 | <0.001 | 0.09 | 0.02 | 0.02 | 0.13 |
| Any 12-month mood or anxiety disorder[c] | 0.14 | <0.001 | 0.13 | <0.001 | 0.05 | 0.09 | 0.05 | <0.001 |

[a] NESARC=National Epidemiologic Survey on Alcohol and Related Conditions. Pain interference denotes moderate to extreme interference. See Figure 1 for structural model of variables of primary interest.
[b] Includes nicotine dependence, alcohol use disorder, drug use disorder, and other (nonopioid) prescription drug use disorders.
[c] Includes major depressive disorder, dysthymia, bipolar I disorder, bipolar II disorder, panic disorder, social anxiety disorder, specific phobia, and generalized anxiety disorder.

whereas pain at baseline was associated with prescription opioid use disorder at follow-up, prescription opioid use disorder at baseline was not associated with pain at follow-up. The results were consistent across different modeling strategies, indicating the robustness of the findings. Several demographic and clinical correlates were also directly associated with both pain and prescription opioid use disorders. Furthermore, older age decreased the risk of prescription opioid use disorder but increased the risk of pain, whereas male as compared with female sex increased the risk of prescription opioid use disorder but decreased the risk of pain.

Our first major finding was an association between pain at baseline and disorder-level prescription opioid use at follow-up that was independent of the demographic and clinical factors. The path for pain interference was associated with a 41% relative increase in the risk of developing a prescription opioid use disorder. This prospective association extends results from cross-sectional studies that have documented a link between pain and prescription opioid use disorders (10). Persistent pain may lead some individuals to use prescription opioids in patterns different from what their prescribing physician intended, leading to tolerance and withdrawal symptoms and eventually to opioid abuse or dependence. Pain, an extremely powerful motivator, may also lead individuals to discount the long-term risks of their actions in an urgent effort to suppress pain. Because both pain and opioids can activate dopamine release in their acute phase, they may share some neurobiological mechanisms in the brain reward and motivational systems (30). Complex biological interactions related to pain or inflammation, which often accompanies pain, may also alter opioid receptors and increase the risk of addiction (31).

In order to reduce the long-term risk of prescription opioid use dependence in individuals with chronic pain, ongoing assessment of pain, consideration of alternative treatments, and treatment of comorbid medical or psychiatric conditions may be useful (32). Use of tamper-resistant medications or partial opioid agonists such as buprenorphine may also help provide adequate treatment while minimizing the abuse potential (33). Outside of supervised settings, reducing opioid use in patients with chronic pain is often clinically challenging and quite difficult to achieve and maintain (34). Our findings highlight the need to provide evidence-based treatment for individuals in pain and to develop more effective nonopioid alternative treatments for those who do not respond to existing options.

Our second major finding was that prescription opioid use disorder was not significantly associated with pain at 3-year follow-up after accounting for potential confounding covariates. This contrasts with findings from cross-sectional studies of clinical samples of individuals in methadone programs (35) and in some (36), although not all (37), studies of patients with acute perioperative exposure to opioids. However, our prospective results are consistent with findings from patients with chronic pain (11, 38) and with the results of the only randomized trial prospectively examining opioid-induced hyperalgesia. In that trial, patients with chronic back pain treated with oral morphine were no more likely than those assigned to placebo to develop hyperalgesia (39).

Consistent with previous studies, several demographic and clinical factors were associated with prescription opioid use disorders and pain (10, 40, 41). These findings converge to highlight the complexity of factors that influence the development and maintenance of pain and prescription opioid use disorders and the challenge of studying these phenomena. From the clinical and preventive perspective, these clinical and demographic characteristics identify subgroups at increased risk who should be screened for pain and prescription opioid abuse. They may also reflect overlaps in the etiology of pain, prescription opioid use disorders, and other psychiatric disorders (42), and they support recent interest in developing transdiagnostic approaches to psychiatric disorders and symptoms (43, 44).

This study has several limitations. First, the NESARC sampled individuals age 18 and older, and the relationship between pain and prescription opioid use disorders may differ in younger individuals. Second, pain was assessed only at two time points 3 years apart, precluding the assessment of the relationship between pain and prescription opioid use disorder using other time frames (e.g., lifetime) or over longer periods. Furthermore, the data were collected a decade ago. Nevertheless, the NESARC remains the most recent nationally representative cohort of U.S. adults. Third, the NESARC did not assess inmate populations, which may have a higher prevalence of substance use disorders (45). Fourth, the assessment of nonmedical use of prescription opioids, although extensive, was not exhaustive. In addition, it included two nonopioid medications (celecoxib and rofecoxib). However, because these medications do not have addictive potential, they are unlikely to have led to prescription drug use disorders and thus to have biased the estimates of the study. Fifth, the NESARC did not ask how individuals obtained their medications. Sixth, as in any complex model, the estimates of the associations should be interpreted with caution and taking into account that they are not independent associations, but rather adjusted for the other covariates in the model. Finally, the NESARC assessed pain with a single item and did not query about the location or duration of the pain.

In a large nationally representative sample, pain predicted opioid use disorder. We hope that this finding helps to focus research and practice on development and use of nonopioid strategies for pain management.

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ORIGINAL ARTICLE

# Latent structure of social fears and social anxiety disorders

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**Background.** Despite its high prevalence and associated levels of impairment, the latent structure of social anxiety disorder (SAD) is not well understood, with published studies reporting inconsistent results. Furthermore, it is unknown whether the latent structure of social fears in individuals with and without SAD is the same.

**Method.** Exploratory factor analysis (EFA) and confirmatory factor analysis followed by multiple indicators multiple causes (MIMIC) analysis were conducted on 13 commonly feared social situations assessed in a nationally representative sample including individuals with SAD and those with social fears but who did not meet DSM-IV criteria for SAD.

**Results.** An EFA conducted in the full sample, including individuals with no social fears (88% of the sample), yielded only one factor. When the sample was restricted to those with at least one social fear, the EFA yielded three factors, in both the subsample with at least one social fear but no SAD and the subsample with SAD. The three factors represented feared situations related to public performance, close scrutiny and social interaction. The MIMIC analyses further indicated that the three-factor structure was able to explain differences in prevalence of social fears across a broad range of sociodemographic covariates.

**Conclusions.** Among individuals with at least one social fear and those with DSM-IV SAD the latent structure of social fears appears to be best described by three factors, although this may partially depend on how the sample is specified. These results may help reconcile the findings of different numbers of factors identified in previous studies.

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**Key words:** Latent structure, MIMIC, social anxiety disorder, social fears.

## Introduction

Social anxiety disorder (SAD) involves an excessive fear or avoidance of social situations such as going to a party, talking to people in authority or initiating a date, and performance situations such as public speaking or eating in front of others (APA, 1994; Bandelow & Stein, 2004). SAD is associated with substantial co-morbidity, psychosocial impairment and poor quality of life (Grant *et al.* 2005). The estimated lifetime and 12-month prevalence of SAD are 5.0–12.1% and 2.8–7.1%, respectively (Kessler *et al.* 1994; Magee *et al.* 1996; Grant *et al.* 2005), making SAD one of the most prevalent psychiatric disorders in the general population.

Despite the high prevalence and associated personal and societal burden of SAD, few studies have examined the latent structure underlying its symptoms, i.e. a latent factor model which could explain the degree of association across different social fears. The few published studies have obtained a variety of results, supporting the existence of one (Ruscio *et al.* 2008), three (Safren *et al.* 1998; Sakurai *et al.* 2005), four (Safren *et al.* 1999; Oakman *et al.* 2003) and five (Perugi *et al.* 2001) factors. Although those studies used different numbers of items [from 14 in the study by Ruscio *et al.* (2008) to 40 in the study by Sakurai *et al.* (2005)] and different instruments to conduct their analyses, they have identified factors assessing similar domains including social interaction anxiety, fears of being observed, and public speaking fear. Previous studies have generally been conducted in small, geographically localized, clinical samples, making the results difficult to extrapolate to the general population. Only two studies have been carried out in representative community samples (Cox *et al.*

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2008; Ruscio *et al.* 2008). Ruscio *et al.* (2008), using data from the National Comorbidity Survey Replication (NCS-R), found that a single factor provided a good fit to the covariances observed among social fears but did not examine whether the factor structure (including the number of factors) was the same in individuals with SAD *versus* those with social fears who did not meet Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV) criteria for SAD. In another study, Cox *et al.* (2008) focused on the factor structure of social fears among individuals with SAD, also using the NCS-R database and cross-validating their results with data from the Canadian Community Health Survey on Mental Health and Wellbeing. Cox *et al.* (2008) identified three factors, representing social interaction fears, fears of being observed, and public speaking fears. They explained the discrepancy between their results and those of Ruscio *et al.* (2008) as a result of differences in sample selection. Cox *et al.* (2008) only studied those respondents who met DSM-IV criteria for a lifetime diagnosis of SAD, whereas Ruscio *et al.* (2008) studied the whole sample. Neither study examined the relationship of sociodemographic characteristics to social fears or the roles they play in relation to the underlying latent factors.

We sought to advance our understanding of the latent structure of SAD in the community using data from the National Epidemiological Survey on Alcohol and Related Conditions (NESARC), a large psychiatric epidemiological study of US adults. Because of differences in the literature regarding the latent structure of social fears using different data sources, our first aim was to compare within the same data set, and thus controlling for methodology, the latent structure of individuals with SAD and those with social fears but who did not meet DSM-IV criteria for SAD. A difference in the factor structure underlying fears among those with SAD and those without SAD would provide insight into psychological or biological differences in the mechanisms underlying the fears experienced by these two groups. On the other hand, if the factor structure of fears for those with SAD were no different than those without, this would suggest that there is nothing unique about the pattern of fears seen in those with SAD as compared with those with non-pathological social fears or in the mechanisms underlying those fears.

Furthermore, because the prevalence, course and phenomenology of SAD vary across sociodemographic characteristics (Grant *et al.* 2005; Blanco *et al.* 2011; Polo *et al.* 2011; Xu *et al.* 2011), our second aim was to examine the relationships between the latent structure of social fears and a broad range of sociodemographic characteristics and to test whether some sociodemographic groups tended to be higher or lower on the underlying latent factors or to have higher or lower prevalence of certain social fears than predicted based on the latent factor model. This aim fills a gap in the literature by indicating whether certain groups are more or less likely to experience certain fears. Moreover, the investigation of differences between the frequencies of fears predicted by the latent factor model and those observed for some sociodemographic groups (i.e. known as testing for uniform invariance) will provide insight into whether there is variability in fear profiles for some sociodemographic groups.

## Method

### *Sample*

The 2001–2002 NESARC is an assessment of a representative sample of the US population conducted by the National Institute on Alcohol Abuse and Alcoholism (NIAAA). The NESARC target population was the civilian population residing in households or group living quarters, aged 18 years and older. Face-to-face interviews were conducted with 43 093 respondents. The survey response rate was 81%. Blacks, Hispanics and young adults (aged 18–24 years) were oversampled, with data adjusted for oversampling and household- and person-level non-response. The weighted data were then adjusted to represent the US civilian population based on the 2000 Census.

### *DSM-IV diagnostic interview*

The diagnostic interview used to generate diagnoses was the NIAAA Alcohol Use Disorder and Associated Disabilities Interview Schedule-DSM-IV Version (AUDADIS-IV). This structured diagnostic interview, designed for lay professional interviewers, was developed to advance measurement of substance use and mental disorders in large-scale surveys.

Consistent with the DSM-IV, a diagnosis of SAD required a marked or persistent fear of at least one of 14 social or performance situations (including a residual 'other situation' category). Exposure to the situation must have almost invariably provoked anxiety (which may have taken the form of a situationally bound or predisposed panic attack), the feared social situation must have been avoided or endured with intense anxiety, and the fear had to be recognized as excessive or unreasonable. All diagnoses of SAD required that the DSM-IV clinical significance criterion be met (i.e. symptoms of the disorder must have caused clinically significant distress and/or impairment in social, occupational, or other areas of functioning).


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As reported elsewhere (Grant *et al.* 2003), test–retest reliability of SAD diagnoses was fair ($\kappa$=0.46), which compares favorably with the test–retest reliability for instruments used in other large epidemiological surveys (Kessler *et al.* 2005; Ruscio *et al.* 2008).

### *Statistical analysis*

Because several factor structures have been identified in previous analyses of different samples, we performed exploratory factor analysis (EFA) of the 13 specific social/performance situations (i.e. excluding the residual 'other situation' category, due to its heterogeneity) using the whole NESARC sample and then in the subgroups of individuals with SAD ($n$=1956 after dropping 27 respondents with SAD who endorsed only 'other situations', which could not be analysed as a coherent fear category), and individuals with one or more feared situations but who did not meet criteria for a diagnosis of SAD ($n$=3088). One- to five-factor EFA models using geomin oblique rotation were fit in the full sample and in the two subgroups. The number of underlying factors for the full sample and each subgroup was determined based on the eigenvalues of the tetrachoric correlation matrices, interpretability of the EFA factors by examining loadings >0.40, and the goodness-of-fit measures including the comparative fit index (CFI), Tucker–Lewis index (TLI), and root mean squared error of approximation (RMSEA). Hu *et al.* (1992) recommended CFI and TLI values above 0.95, and RMSEA values below 0.06, as representing good model fit.

After determining the number of factors in the two subgroups, multiple group EFA (Dolan *et al.* 2009), using exploratory structural equation modeling (ESEM) (Muthén and Muthén, 1998–2006; Asparouhov & Muthén, 2009; Marsh *et al.* 2009), was used to test measurement invariance of the fears with respect to group. Specifically, configural (i.e. same fears load on same factors across groups) and weak (i.e. factor loadings equal across groups) invariances were assessed (see Supplementary material). Given a finding of ESEM measurement invariance between the two subgroups (i.e. the same number of factors and equivalent loadings of fear situations onto those factors), an additional EFA was then fit to the combined sample of individuals with at least one feared situation ($n$=5044).

The factor structure suggested by the EFA was then tested using confirmatory factor analysis (CFA), in which each feared situation was chosen to load on the factor on which it had the largest loading in the EFA. CFI, TLI and RMSEA were again used to assess the goodness of fit of the CFA. In the current study we chose not to implement cross-validation (e.g. fit EFA models on half the data, then CFA on the other half). Given this study's very large sample size weighted to the national population, there is little sampling variability expected and so it is highly unlikely that different factor solutions would emerge from random halves.

Finally, a multiple indicators multiple causes (MIMIC) approach (Muthén and Muthén, 1998–2006) was used to regress the common factors on sociodemographic covariates chosen based on existing literature suggesting their association with differences in the prevalence, phenomenology and course of SAD (Hart *et al.* 1999; Stein & Kean, 2000; Fink *et al.* 2009; Moitra *et al.* 2011; Hsu *et al.* 2012). The MIMIC approach allows simultaneous examination of several covariates. It provides an alternative to multiple group testing, which requires the creation of mutually exclusive groups (e.g. males *versus* females) that can be cumbersome when multiple covariates are examined. Standardized estimates of the direct relationship between covariates and the latent factors indicate how many standard deviations higher (or lower) the mean of the latent factor is expected to be for each level of the categorical covariates or for a one standard deviation increase in the continuous covariate (age) while holding all other covariates constant. Statistical significance of the covariate effects on factors was determined when $p$ values were less than 0.01.

The MIMIC model was further used to identify whether any additional direct effects from covariates to specific social/performance situation were warranted, indicating a lack of uniform invariance (intercept invariance) in the relationship between the social/performance situation and the latent factor across specific covariates. Following conventions for testing these additional direct paths (Stark *et al.* 2006; Kim *et al.* 2011), we used a conservative modification index (MI) cut-off of 15.2 corresponding to a $\chi^2$ test with 1 degree of freedom and a $p$ value of 0.01/104= 0.0001 which was Bonferoni corrected based on the 104 tests of eight covariate categories by 13 social/performance situations.

All analyses where conducted in Mplus version 6.1 (Muthén and Muthén, 1998–2006), which takes into account the NESARC sampling weights and design effects in all analyses, including parameter as well as standard error estimation and model fit calculations. The default estimator for the analysis was weighted least squares using a diagonal weight matrix (WLSMV) accompanied by standard errors and mean- and variance-adjusted $\chi^2$ test statistics that use a full weight matrix. The WLSMV is a robust estimator that does not assume normally distributed variables and provides the best option for modeling categorical


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**Table 1.** *Sociodemographic characteristics*

| Variable | Lifetime SAD ($n$=1983[a]) | | At least one fear situation but no SAD ($n$=3088) | | No lifetime SAD ($n$=38 022) | |
|---|---|---|---|---|---|---|
| | % | (95% CI) | % | (95% CI) | % | (95% CI) |
| Age, years | | | 44.80 | | 45.39 | |
| Mean | 43.17 | | 43.95–45.64 | | 45.01–45.77 | |
| 95% CI | 42.35–43.98 | | | | | |
| Gender | | | | | | |
| Male | 40.51 | (37.88–43.19) | 46.17 | (44.04–48.30) | 48.49 | (47.82–49.15) |
| Females | 59.49 | (56.81–62.12) | 53.83 | (51.7–55.96) | 51.51 | (50.85–52.18) |
| Race | | | | | | |
| Non-Hispanic white and other[b] | 84.9 | (82.6–86.94) | 79.7 | (76.31–82.71) | 76.76 | (73.85–79.43) |
| Non-Hispanic black | 7.68 | (6.38–9.21) | 10.79 | (9.03–12.85) | 11.28 | (10.05–12.64) |
| Hispanic | 7.42 | (6.00–9.14) | 9.51 | (7.40–12.14) | 11.96 | (9.62–14.79) |
| Education level | | | | | | |
| Less than high school | 15.00 | (13.00–17.24) | 16.19 | (14.42–18.13) | 15.64 | (14.68–16.66) |
| High school | 31.64 | (28.93–34.48) | 33.58 | (31.21–36.03) | 28.84 | (27.77–29.94) |
| College | 53.36 | (50.24–56.46) | 50.23 | (47.55–52.90) | 55.52 | (54.26–56.77) |
| Marital status | | | | | | |
| Married | 60.03 | (57.31–62.69) | 56.4 | (54.14–58.62) | 62.15 | (61.18–63.11) |
| Widowed/separated/divorced | 17.92 | (16.23–19.75) | 18.75 | (17.07–20.55) | 17.32 | (16.86–17.80) |
| Single, never married | 22.05 | (19.63–24.67) | 24.85 | (23.00–26.81) | 20.53 | (19.57–21.51) |
| Employment status | | | | | | |
| Employed | 63.49 | (60.84–66.05) | 62.00 | (59.86–64.09) | 65.31 | (64.46–66.15) |
| Unemployed | 36.51 | (33.95–39.16) | 38 | (35.91–40.14) | 34.69 | (33.85–35.54) |

SAD, Social anxiety disorder; CI, confidence interval.

[a] Individuals with SAD based on a feared situation from the category 'other' ($n$=27) are included here but not in the following tables examining the 13 specific feared situations.

[b] 'Other' includes 6% combined Native American and Asian/Pacific Islander.

or ordered data. The final confirmatory model was also refit without incorporating the sampling weights to ensure the robustness of the results.

## Results

### *Sociodemographic characteristics of the sample*

There were 1983 individuals with lifetime SAD, 3088 with one or more social fears but no SAD, and 38 022 individuals with no lifetime SAD (or social fears). Individuals with lifetime SAD were, on average, younger than those with one social fear but no SAD who, in turn, were younger than those with no lifetime SAD. The difference in the proportion of women *versus* men was largest in the SAD group, intermediate in those with one social fear, and smallest among those with no lifetime SAD. Most individuals in the sample had at least some college education, and this was true of all three groups. Similarly, most individuals in all three groups were married, although the proportion of never-married individuals was slightly higher among individuals who endorsed at least one social fear or met criteria for lifetime SAD than in the no lifetime SAD group. Finally, having a lifetime history of SAD or one or more social fears was also associated with a lower probability of employment (Table 1).

### *EFAs*

Of the 13 lifetime social fears, the most commonly endorsed across the whole sample was 'speaking or talking in front of other people' (10.1%), and the least common was 'being in a small group situation' (1.4%).

One large eigenvalue, 11.0, was found for the tetrachoric correlation matrix of the 13 fear situations in the full sample, with all other eigenvalues less than 1. This finding in the full sample is strongly suggestive of one underlying factor (correlations between items range: 0.73–0.98) but is highly influenced by the large number of individuals (>88%) with all zero values on the 13 items. That is, when those individuals with all zeros are removed, the eigenvalues and correlations change substantially as described below. The EFA


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results for the full sample are shown in Supplementary Table S1. Whereas the one-factor model fits very well (RMSEA=0.021, CFI=0.999, TLI=0.999), the factor loadings of the two-factor model yielded interpretable factors, including one factor that combined fears of public performance and close scrutiny, whereas the other included fears of interactions. The three-, the four- and the five-factor models did not further yield separate interpretable factors within the full sample. Specifically, factor 3 in the three-factor model, factor 4 in the four-factor model and factors 4 and 5 in the five-factor model did not have any items with loadings $\geqslant$0.4, and factor 3 in the four-factor model only had two items with loadings $\geqslant$0.4.

Because of the potential for salient underlying structure of the SAD criteria to go undetected when using the full sample with a large proportion of individuals with all zero values, we next examined the factor structure in subgroups endorsing at least one social fear. The first three eigenvalues for the subgroup with SAD $\geqslant$1.0 were: 5.45, 1.99 and 1.17. Similarly, for the subgroup with at least one feared situation but without SAD, there were also only three eigenvalues >1.0: 4.48, 2.33 and 1.16. Supplementary Table S2 shows the EFA results for the one- to five-factor models in both subgroups. In both groups, the one- and two-factor models did not meet the thresholds for all of the goodness-of-fit criteria, but the three-factor models did (three-factor EFA model: SAD, RMSEA=0.033, CFI=0.980, TLI=0.962; at least one fear but not SAD, RMSEA=0.022, CFI=0.985, TLI=0.971). As expected, the more complex four-factor and five-factor models improved the goodness of fit even further, but the additional factors were deemed to be not broadly interpretable.

Because the three-factor model was the one that best fit the data and the resultant factors were clinically interpretable we focused on this model in subsequent analyses. The ESEM for testing measurement invariance of the three-factor EFA models between the two subgroups found for the unconstrained model a $\chi^2$=232 (df=84), and the constrained model $\chi^2$=245 (df=114), resulting in a robust $\chi^2$ difference value of 54.7 (df=30; $p$=0.004) (note the robust $\chi^2$ difference is not simply the difference of the $\chi^2$) (Asparouhov & Muthén, 2006). Furthermore, the CFI for the unconstrained model was 0.984 and the CFI for the model with loadings constrained to be the same across groups was 0.982. Thus with a CFI difference <0.01, we concluded that the two subgroups did not differ significantly in the configuration of their three-factor structure and the magnitude of their loadings and present the result of the EFA in the combined group with at least one feared situation in Table 2.

### *CFAs and MIMIC models*

A CFA with three factors, which based on their content we named 'public performance', 'close scrutiny' and 'interaction', was fitted. The three factors were moderately to highly correlated, with 'close scrutiny' being correlated 0.65 with 'public performance' and 0.71 with 'interaction'; 'public performance' and 'interaction' were correlated at 0.40. This model had good fit (RMSEA=0.037, CFI=0.960, TLI=0.950) (Table 2). When the model was refit without sampling weights, the factor loadings were the same to the second decimal place, CFI and TLI were identical, and RMSEA=0.051.

The MIMIC model, including the different effects of sociodemographic variables on the factors and the direct effects of sociodemographic variables on each social fear also demonstrated good fit (RMSEA=0.028, CFI=0.946, TLI=0.931) (Table 3). Age and marital status were significant predictors of the 'interaction' factor, such that being younger and separated, widowed, or divorced predicted higher scores on this factor. Gender was a significant predictor of 'public performance' and 'close scrutiny', such that women were approximately 0.26–0.29 s.d. higher on each factor. Older age and more education were significantly associated with lower scores on both the 'close scrutiny' and 'interaction' factors. Furthermore, being separated, widowed or divorced was associated with a 0.34 s.d. increase in the 'interaction' factor. Overall there was only very minimal variation (2.9–4.7%) in the three latent factors explained by the demographic covariates.

Of the 104 tests for invariance of specific fears as a function of each of the demographic covariates, only three met the critical value for statistical significance. Males were more likely to experience fear associated with dating than would be explained by the 'interaction' latent factor (MI=26.2), blacks were less likely to experience fear from speaking to an authority figure than predicted by the 'close scrutiny' factor (MI=20.1), and increased age was associated with higher than expected fear of taking an important examination than predicted by the 'close scrutiny' factor (MI=15.3).

## Discussion

This is the first study to examine the latent structure of social fears among individuals with SAD as well as individuals with social fears but no SAD, to examine whether their latent structure is similar, and to use MIMIC analyses to examine the relationship of sociodemographic characteristics with the latent factors. We highlight three major findings. First, the factor


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**Table 2.** *Exploratory and confirmatory factor analysis results for individuals with at least one feared social/performance situation (n=5044)*[a]

| | | Exploratory factor analysis[b] | | | Confirmatory factor analysis[c] | | |
|---|---|---|---|---|---|---|---|
| | Prevalence, % | Public performance | Close scrutiny | Interaction | Public performance | Close scrutiny | Interaction |
| Speaking in front of other people | 82.9 | 0.87[d] | −0.35 | −0.01 | 0.57 | | |
| Taking part/speaking in class | 68.5 | 0.82[d] | 0.03 | −0.12 | 0.77 | | |
| Taking part/speaking at a meeting | 57.7 | 0.84[d] | −0.06 | 0.06 | 0.87 | | |
| Performing in front of other people | 65.9 | 0.60[d] | 0.09 | 0.03 | 0.72 | | |
| Being interviewed | 35.5 | 0.37 | 0.47[d] | 0.01 | | 0.78 | |
| Writing when someone watches | 16.0 | 0.005 | 0.44[d] | 0.16 | | 0.55 | |
| Taking an important examination | 44.1 | 0.002 | 0.99[d] | −0.40 | | 0.59 | |
| Speaking to an authority figure | 35.9 | 0.16 | 0.67[d] | 0.003 | | 0.79 | |
| Eating/drinking in front of other people | 11.6 | −0.01 | 0.17 | 0.61[d] | | | 0.73 |
| Having conversations with people you do not know well | 45.7 | 0.09 | 0.02 | 0.71[d] | | | 0.77 |
| Going to parties/social gatherings | 37.1 | 0.01 | −0.04 | 0.90[d] | | | 0.81 |
| Dating | 17.5 | −0.06 | 0.31 | 0.45[d] | | | 0.68 |
| Being in a small-group situation | 11.5 | 0.05 | 0.22 | 0.55[d] | | | 0.77 |
| Goodness of fit – $\chi^2$ (df) | | | 168.4 (42) | | | 489.6 (62) | |
| RMSEA | | | 0.024 | | | 0.037 | |
| CFI | | | 0.988 | | | 0.960 | |
| TLI | | | 0.978 | | | 0.950 | |

df, Degrees of freedom; RMSEA, root mean squared error of approximation; CFI, comparative fit index; TLI, Tucker–Lewis index; ESEM, exploratory structural equation modeling; SAD, social anxiety disorder.

[a] Multiple group ESEM showed no significant difference in the three-factor structure between the individuals with SAD and those with at least one feared situation but no SAD (see text); thus they are combined.

[b] Geomin oblique rotated factor loadings.

[c] Estimated correlation between factors in confirmatory factor analysis: 'public performance' with 'close scrutiny'=0.65, with 'interaction'=0.40, 'close scrutiny' with 'interaction'=0.71.

[d] To help facilitate interpretation, values larger than 0.40 are indicated.

structure of SAD was best described by three correlated factors. Second, the factor structure was the same when considering all individuals who endorsed a social fear as when restricting the analyses to those who met criteria for a DSM-IV diagnosis of SAD. Examination of the factor structure of these subgroups allowed us to reconcile apparently contradictory findings from previous large epidemiological studies. Third, most sociodemographic characteristics had very limited or no effect on the factor structure of SAD.

The latent structure of SAD was best described by three factors: (1) 'public performance'; (2) 'close scrutiny'; and (3) 'interaction'. Our findings are consistent with those obtained by Cox *et al.* (2008), who also identified three factors reflecting similar dimensions: (*a*) a social interaction fears factor, which appears similar to our 'interaction' factor; (*b*) an observation fears factor, which appears similar to our 'close scrutiny' factor; and (*c*) a public speaking fears factor, which appears similar to our 'public performance' factor.

The factors identified by our study seem to identify underlying dimensions similar to those in previous studies using different methodological approaches. For example, Safren *et al.* (1998, 1999), analysing two self-report scales, the Social Interaction Anxiety Scale and the Social Phobia Scale, and then the Liebowitz Social Anxiety Scale, identified factors named 'observation by others', 'public speaking' and 'anxiety about being observed by others', which, as Sakurai's 'scrutiny fears' (Sakurai *et al.* 2005) and Perugi's 'formal speaking anxiety' (Perugi *et al.* 2001), are very similar to our 'public performance'. The convergence of these findings suggests that SAD may have certain underlying dimensions, possibly with their own neurobiological substrates that may be amenable to more targeted psychological or pharmacological treatments. They seem to represent three different aspects of the fear: the collective rejection implied by 'public performance', the individual rejection by someone considered an authority in the case of 'close scrutiny',

**Table 3.** *MIMIC model in individuals with one or more fears with or without SAD (n=5044)*

| | Model fit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Model | | | | | | | | | |
| $\chi^2$ Value (df), $p$ value | 721.6 (152), <0.0001 | | | | | | | | |
| CFI | 0.944 | | | | | | | | |
| TLI | 0.928 | | | | | | | | |
| RMSEA | 0.027 | | | | | | | | |
| | Public performance | | | Close scrutiny | | | Interaction | | |
| | Estimate[a] | (S.E.) | $p$ | Estimate[a] | (S.E.) | $p$ | Estimate[a] | (S.E.) | $p$ |
| Item | | | | | | | | | |
| Age | 0.02 | (0.001) | 0.35 | −0.08 | (0.002) | 0.002[b] | −0.15 | (0.001) | 0.000[b] |
| Male | −0.26 | (0.04) | 0.000[b] | −0.29 | (0.04) | 0.000[b] | −0.07 | (0.05) | 0.13 |
| Black | −0.11 | (0.05) | 0.05 | −0.13 | (0.06) | 0.02 | −0.00 | (0.06) | 0.94 |
| Hispanic | −0.06 | (0.07) | 0.40 | 0.03 | (0.07) | 0.65 | −0.01 | (0.06) | 0.82 |
| Less than high school education | −0.01 | (0.07) | 0.82 | 0.20 | (0.08) | 0.01[b] | 0.18 | (0.07) | 0.01[b] |
| At least some college education | −0.10 | (0.05) | 0.05 | −0.15 | (0.05) | 0.003[b] | −0.14 | (0.05) | 0.004[b] |
| Separated, divorced, or widowed | −0.02 | (0.05) | 0.64 | 0.07 | (0.05) | 0.16 | 0.34 | (0.06) | 0.000[b] |
| Never married | −0.16 | (0.06) | 0.01[b] | −0.05 | (0.06) | 0.40 | 0.10 | (0.06) | 0.06 |
| Employed | −0.002 | (0.05) | 0.97 | −0.06 | (0.05) | 0.22 | −0.12 | (0.04) | 0.004[b] |
| $R^2$ | 0.03 | | | 0.04 | | | 0.05 | | |

MIMIC, Multiple indicators multiple causes; SAD, social anxiety disorder; df, degrees of freedom; CFI, comparative fit index; TLI, Tucker–Lewis index; RMSEA, root mean squared error of approximation; S.E., standard error.

[a] Estimates represent the standard deviation change in the latent factors associated with the presence of the particular binary predictor versus the referent category, except for age which is modeled continuously and thus represents the standard deviation change in the latent factors associated with a one standard deviation change in age.

[b] $p<0.05$.

and the rejection by someone in the individual's social world in the 'interaction' factor. Future studies should examine potential correlations of these factors with specific brain areas or circuits, as was recently done for latent factors within major depression (Milak *et al.* 2005), or examine the possible association of these factors with genes previously related to anxiety disorders (Gelernter *et al.* 2004) with environmental factors, or with treatment response. It is possible that the 'interaction' factor may be more closely related to brain circuits for the processing of empathy (e.g. mirror neurons) and other emotions, whereas 'close scrutiny' may be more related to areas implicated in the processing of threat signals. Identification of biological and psychological substrates underlying these factors may lead to more refined theoretical models of SAD that can improve our understanding and treatment of this disorder.

Our study, the first to examine the factor structure of social fears in both individuals with SAD and in the general population, found that the latent structure is the same in SAD as it is in the subset of the general population who experienced at least one social fear. A challenge for future classifications will be to determine which levels of severity should be considered pathological, i.e. with clinical significance, and suggest the need for treatment and what may be considered normal variations or even healthy levels of adaptation (Ruscio, 2010). Cross-sectional distress and impairment measures or longitudinal studies of course and complications of SAD may provide some preliminary indications of how to evaluate the potential for a given degree of symptomatology to be clinically significant. Experience from other areas of medicine, such as the assessment of hypertension or cholesterol levels, suggests that progressive refinements of those cut-offs may be necessary as our knowledge of SAD increases (Lauer & Fontanarosa, 2001; Chobanian *et al.* 2003). Furthermore, by conducting our analyses in the full sample (i.e. including those with no social fears) as

well as in those with at least one social fear, we were able to show that the way that samples were defined influenced the factor structure. These findings may also help to reconcile the findings of different numbers of factors identified in previous studies. In particular, they help to reconcile the findings of a one-factor structure in the study by Ruscio *et al.* (2008), who examined the entire sample, and those of Cox *et al.* (2008), who identified three factors in a sample limited to individuals with SAD.

A third finding from our study was that sociodemographic characteristics had a limited effect on the factors. Only three modification indices suggested the presence of direct effects from covariates to feared situations. The direct effect of age on taking an examination may be related to declining cognitive ability with age. It may also indicate that this item does not measure social anxiety in older populations because most individuals are less likely to take tests as they age. The direct effect of gender on dating is consistent with the clinical and social observation that men tend to feel more of a need to initiate dating interactions and that social anxiety may result in distress and interference in this area. By contrast, the direct effect of ethnicity on speaking to an authority figure may indicate that, after taking into account the effect of the 'close scrutiny' factor, blacks may feel less social anxiety regarding interactions with authority figures. Several authors have suggested that the prevalence or clinical presentation of SAD may vary by culture (Kirmayer, 1991; Lepine & Lellouch, 1995; Stein & Matsunaga, 2001; Hong & Woody, 2007), but no prior study had examined invariance of the latent structure of SAD. Our study, by indicating that most sociodemographic characteristics examined had very limited or no effect on the structure of SAD, suggests that social fears tend to aggregate in similar ways in a broad range of populations. The robustness of these associations may help guide future research on the etiology and treatment of SAD and provide indirect support for the generalizability of findings of samples with limited sociodemographic variability. They also further support SAD as a valid nosological entity, an important consideration for future psychiatric classifications.

Our study has several limitations. First, our analyses focus on cross-sectional data and do not examine whether the described latent structures are stable over time. In particular, our analyses do not examine whether the factor loadings and composition are invariant between groups who do and do not respond to treatment. Examination of longitudinal data may help to elucidate this question and shed light on aspects of SAD that are affected by different treatment approaches. Second, because the NESARC sample only included civilians aged 18 years and older, information was unavailable on adolescents. Third, the NESARC is limited to individuals currently living in the USA, and its results may not generalize to individuals living in other countries. Future cross-national studies could help to test whether the findings of this investigation extend to other countries. Additionally, these data only allowed assessment of the structure of SAD in respect to scope of feared situations. Other cognitive, physiological and behavioral symptoms that might further define the structure of the disorder were not addressed by these analyses. Fourth, our analyses were based on 13 items. It is possible that inclusion of a different number of items may have yielded a different solution. However, our results converge with previous studies that have identified factors with similar content despite using different assessment instruments with a much larger number of items (Safren *et al.* 1998; Sakurai *et al.* 2005), suggesting that our results are robust.

In conclusion, the underlying structure of feared situations in SAD appears to be best described by three dimensions. Those dimensions are invariant across several levels of severity and sociodemographic characteristics. A challenge for future research will be the examination of biological and psychosocial determinants of those factors and their treatment implications.

## Supplementary material

For supplementary material accompanying this paper visit http://dx.doi.org/10.1017/S0033291713000408.

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## Declaration of Interest

None.

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# National Trends in the Office-Based Prescription of Schedule II Opioids

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## ABSTRACT

***Objective:*** To investigate national trends and patterns in opioid prescription within office-based medical practice.

***Method:*** An analysis is presented of 1995–2010 data from the National Ambulatory Medical Care Survey, focusing on overall and stratified trends in the percentage of medical visits involving prescriptions for Schedule II opioids. Among visits with opioid prescriptions in 2003–2010, first-time visits were also compared to return visits, and visits in which pain was the primary complaint were compared to visits with other primary complaints.

***Results:*** Among all office visits, the percentage with an opioid prescription increased from 0.65% in 1995–1998 to 2.63% in 2007–2010 (odds ratio [OR] = 8.01; 95% CI, 4.96–12.94). During the study period (1995–2010), opioid prescriptions significantly increased in visits by male patients (OR = 6.54; 95% CI, 3.21–13.31); female patients (OR = 9.38; 95% CI, 6.70–13.14); and patients aged 18–35 years (OR = 5.82; 95% CI, 2.59–13.10), 36–64 years (OR = 8.30; 95% CI, 4.63–14.86), and ≥ 65 years (OR = 8.85; 95% CI, 6.13–12.77), but not ≤ 17 years (OR = 1.52; 95% CI, 0.50–4.63). Prescriptions for opioids also significantly increased in visits by patients with clinical depression (OR = 9.96; 95% CI, 5.45–18.21) or anxiety (OR = 10.99; 95% CI, 5.02–24.06) diagnoses. However, a significant decline occurred in opioid prescriptions in visits among patients with substance use diagnoses (OR = 0.10; 95% CI, 0.00–3.30). The number of opioid prescriptions rose faster among patients making a first visit (OR = 23.36; 95% CI, 11.82–46.17) versus a return visit (OR = 7.26; 95% CI, 4.38–12.03).

***Conclusions:*** A substantial increase occurred between 1995 and 2010 in opioid prescriptions in office-based medical visits, especially in visits by middle-aged and older adults and by patients making their first visit to the treating physician. These trends suggest that physicians have pursued greater pain control despite potential risks of nonmedical use of prescription opioids.


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Prescription opioids deliver prompt and often effective relief from acute and chronic pain.[1] Although most people who are prescribed opioids use them appropriately, there has been an increase in health problems related to opioid misuse. Admissions for prescription opioid use disorders increased over 5-fold between 2000 and 2010,[2] and emergency visits involving opioid use more than doubled between 2004 and 2010.[3] Unintentional opioid-related fatal overdoses approximately tripled between 1999 and 2007.[4] In response, the federal government has sought to reduce prescription drug abuse through physician training in opioid prescribing, public education, drug prescription monitoring, and proper drug disposal.[5,6]

Nonmedical use of prescription opioids is common in the United States. In 2011, 1.7% of people ≥ 12 years of age reported past-month nonmedical use of prescription opioids.[7] Among young adults, 9.8% reported past-year nonmedical opioid use.[7] In addition to young adults, individuals with mood, anxiety, and substance use disorders are at increased risk of nonmedical use of prescription opioids.[8–12] Although most individuals with nonmedical use of prescription opioids subsequently discontinue them, such use nevertheless increases the risk of substance use disorders.[13]

There has been a marked increase in the prescription of opioids. The total number of opioid prescriptions dispensed from US pharmacies increased from 174.1 million to 256.9 million between 2000 and 2009.[14] Although the extent to which increased opioid prescription contributes to opioid-related health problems remains a matter of debate,[15,16] most prescription opioids used for nonmedical purposes are obtained either directly or indirectly from physicians.[7] In a large prospective study[17] of adults receiving opioid therapy to treat pain, the risk of overdose death was directly related to the maximum prescribed daily dose.

In evaluating the public health importance of the increase in prescription opioid use, a key initial step is to characterize trends in the prescription of opioids. It is important to know which patient groups have experienced rapid increases in opioid use and whether the increase has extended to high-risk groups such as those with known substance use disorders. We examined nationally representative data from surveys of office-based medical visits conducted between 1995 and 2010, focusing on the proportion of visits by various subgroups that included Schedule II opioid prescriptions. According to the US Drug Enforcement Administration, Schedule II drugs have a high potential for abuse.[18] Prior to performing these analyses, we expected that, consistent with overall prescribing patterns,[13] there would be significant growth in the proportion of office-based visits involving opioid prescriptions.

## METHOD

Data were drawn from the National Ambulatory Medical Care Survey (NAMCS).[19] The NAMCS samples a nationally representative group of visits to physicians in office-based practice. Data from contiguous survey years were combined to derive more stable estimates (1995–1998,

1999–2002, 2003–2006, and 2007–2010) (total number of visits = 446,542). Survey response rates varied from 58.3% in 2010 to 72.8% in 1995 (mean response rate = 65.7%). For each visit, the treating physician or member of the physician's staff provided information about patient characteristics and medications prescribed or supplied.

### Schedule II Opioids

The dependent variable was prescription of a Schedule II opioid—oxycodone, fentanyl, remifentanil, sufentanil, hydromorphone, hydrocodone, meperidine, morphine, opium, methadone, diphenoxylate, alphaprodine, glutethimide, or oxymorphone—during a medical visit. To distinguish Schedule II opioids from preparations containing these opioids but with less potential for abuse, morphine and diphenoxylate were included only if the visit did not include atropine; opium was included only if the visit did not include pectin, kaolin, or bismuth; and hydrocodone was included only if the visit did not include atropine, carbinoxamine, pseudoephedrine, phenylpropanolamine, phenylephrine, guaifenesin, chlorpheniramine, acetaminophen, aspirin, guaiacolsulfonate, ibuprofen, pyrilamine, or glycerin.

### Patient Demographic Characteristics

Visits were classified by patient sex, age in years at the time of the visit (≤ 17, 18–35, 36–64, ≥65), and race/ethnicity (white non-Hispanic, black non-Hispanic, and Hispanic).

### Primary Source of Payment

Visits were grouped hierarchically into mutually exclusive payment categories in descending order: (1) private insurance, (2) Medicare, (3) Medicaid and other government insurance, and (4) a residual category (self-pay/other).

### Pain

Codes for the reason for the visit were used to classify visits as involving any complaint related to pain. The locations of pain were categorized as head and neck, chest, abdominal/pelvic, back, extremities, and unspecified sites.

### Medical and Mental Disorders

Diagnoses were made by treating physicians according to the *ICD-9-CM*. Visits were first grouped by selected diagnoses, including cancer (140–239, 338.3), low back pain (722.10, 722.52, 724.2–724.6, 738.4, 756.11, 839.2, 846.0, 847.2), depressive disorder (296.2, 296.3, 300.4, 311), anxiety disorders (293.84, 300.0, 300.2–300.3, 308.3, 309.21, 309.81, 313.0), and substance use disorders (291–292, 303–305) or a substance use–related reason for the visit.[20] Each visit included up to 3 diagnoses.

### Other Clinical Characteristics

Visit status was defined as first or returning visit according to whether the treating physician or anyone in the practice had seen the patient before. The specialty of the treating physician was considered as primary care (internal medicine, geriatric medicine, adolescent medicine, pediatrics, family practice, and general practice) or other medical specialty. In the analyses of visits that included opioid prescriptions in 2003–2010, psychiatrists were considered as a separate specialty.

**Clinical Points**

- Prescription of opioid analgesics is increasing in office-based medical practice.
- Particularly rapid increases in opioid prescribing are occurring among older adult patients and patients making their first visit to their treating physician.
- Physicians should remain vigilant for indications of opioid misuse in all of their patients who are prescribed opioids.

### Analytic Strategy

The proportions of office-based visits that included opioids were determined overall and stratified by visit characteristics for each time period (1995–1998, 1999–2002, 2003–2006, 2007–2010). Logistic regression models were used to assess time trends in the probability that visits included opioid prescriptions. A study year period variable was defined to assess the strength of the association of opioid prescriptions across the entire study period from 1995 to 2010. The study period variable was constructed by assigning a value of 0 to 1995, 1/15 to 1996, 2/15 to 1997, and so forth, with 2010 assigned a value of 15/15 or 1. The odds ratio (OR) associated with this variable indicates change over the study year period. For example, an OR of 2.0 denotes twice the odds of an opioid prescription in 2010 as compared with 1995. Separate regressions were constructed for each level of visit characteristic. An interaction term was added to each regression to assess whether trends in visits that included opioid prescriptions significantly differed across groups.

Separate analyses were performed to compare visits including opioid prescriptions for first-time and returning patients in 2003–2010. We also compared visits including opioids with and without pain as the primary reason for the visit. These comparisons sought to identify the distinguishing characteristics of opioid-treated patients whose presenting complaints were not clearly linked to the primary clinical indication for opioids and whose visit may therefore be more likely to include discretionary opioid treatment. Differences in proportions were evaluated with $\chi^2$ tests.

Analyses were adjusted for visit weights, clustering, and stratification of data using design elements. When adjusted for these elements, survey data represent annual visits to US office-based physicians.[19] Analyses were conducted using SUDAAN software (RTI International, Research Triangle Park, North Carolina); all analyses were 2-sided ($\alpha = .05$).

## RESULTS

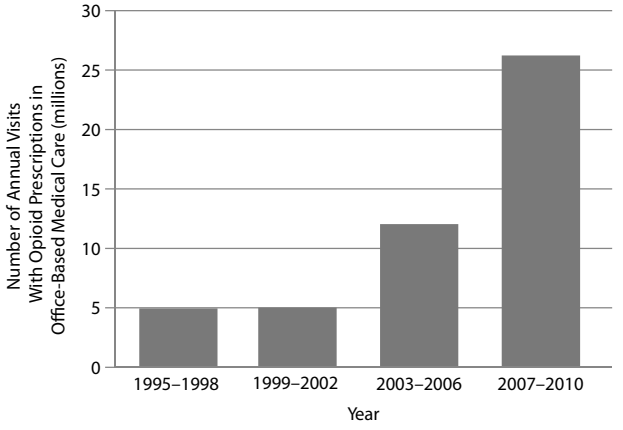
### Trends in Opioid Use

Medical office visits that included opioid prescriptions increased from 0.65% in 1995–1998 to 2.63% in 2007–2010. On an annual basis, this finding translates into an increase

from approximately 4.95 million visits in 1995–1998 to 26.25 million visits in 2007–2010 (Figure 1).

Growth in visits with opioid prescriptions was faster in the 2 older age groups than in the young adult group (18–35 years of age); the rate of visits with opioids did not significantly increase in visits by children and adolescents (≤ 17 years of age). In 2007–2010, the highest rate of visits with opioid use was among patients aged 36–64 years. Growth in opioid use also occurred significantly faster in visits by patients who were white versus Hispanic, as indicated by the significant Hispanic × time interaction (Table 1).

**Figure 1. National Estimates of Annual Number of Visits With Opioid Prescriptions in Office-Based Medical Care in 1995–2010 in the United States**




The percentage of first visits to the treating physician that included an opioid prescription increased significantly faster than the corresponding percentage of return visits, as reflected by the patient status × time interaction. Visits including opioids also increased significantly faster among patients with private insurance versus Medicaid, although these groups had similar rates of opioid prescriptions in 2007–2010 (see Table 1).

Patient visits with pain as the primary reason for the visit were more likely than those without such complaints to receive opioids, although the rate of growth in opioid prescriptions did not significantly differ between these 2 groups. During the study period, pain in the extremities and in unspecified sites was associated with particularly rapid increases in receiving an opioid, while back pain was associated with the highest rate of opioid use. In 2007–2010, 20.7% of visits that included an opioid prescription and a back pain diagnosis were for a new problem of less than 3 months' duration. Significant increases also occurred in the proportion of visits that involved diagnoses of depression and anxiety and included opioid prescriptions (Table 2).

Visits involving a substance use disorder were a notable exception to the increasing use of opioids. Patient visits that involved substance use disorders became significantly less likely to include an opioid prescription. Use of opioids among visits that included a cancer diagnosis increased during the study period, but the increase tended ($P = .05$) to be slower than the corresponding increase among visits without a cancer diagnosis (see Table 2).

**Table 1. Trends in Medical Visits With Prescription of a Schedule II Opioid, Stratified by Demographic and Practice Characteristics, in the United States in 1995–2010[a]**

| Characteristic[b] | 1995–1998, % | 1999–2002, % | 2003–2006, % | 2007–2010, % | OR (95% CI)[c] | Interaction $P$[d] |
|---|---|---|---|---|---|---|
| Total ($n_1 = 114,979$; $n_2 = 101,120$; $n_3 = 105,887$; $n_4 = 124,556$) | 0.65 | 0.60 | 1.31 | 2.63 | 8.01 (4.96–12.94) | |
| Sex | | | | | | |
| Male ($n_1 = 47,987$; $n_2 = 43,623$; $n_3 = 45,325$; $n_4 = 52,958$) | 0.80 | 0.61 | 1.45 | 2.65 | 6.54 (3.21–13.31) | .16 |
| Female ($n_1 = 66,992$; $n_2 = 57,497$; $n_3 = 60,562$; $n_4 = 71,598$) | 0.55 | 0.60 | 1.21 | 2.62 | 9.38 (6.70–13.14) | |
| Age, y | | | | | | |
| ≤ 17 ($n_1 = 19,836$; $n_2 = 17,179$; $n_3 = 17,930$; $n_4 = 21,384$) | 0.10 | 0.07 | 0.06 | 0.14 | 1.52 (0.50–4.63) | .06 |
| 18–35 ($n_1 = 21,079$; $n_2 = 16,057$; $n_3 = 16,245$; $n_4 = 19,512$) | 0.59 | 0.52 | 1.19 | 2.12 | 5.82 (2.59–13.10) | < .0001 |
| 36–64 ($n_1 = 43,915$; $n_2 = 40,536$; $n_3 = 43,341$; $n_4 = 50,778$) | 1.06 | 0.85 | 1.99 | 4.08 | 8.30 (4.63–14.86) | |
| 65+ ($n_1 = 30,149$; $n_2 = 27,348$; $n_3 = 28,371$; $n_4 = 32,882$) | 0.55 | 0.69 | 1.26 | 2.51 | 8.85 (6.13–12.77) | < .0001 |
| Race/ethnicity | | | | | | |
| White ($n_1 = 96,210$; $n_2 = 85,700$; $n_3 = 85,137$; $n_4 = 94,643$) | 0.63 | 0.64 | 1.40 | 2.84 | 8.93 (5.86–13.60) | |
| Black ($n_1 = 10,224$; $n_2 = 8,357$; $n_3 = 9,540$; $n_4 = 13,644$) | 0.71 | 0.55 | 1.07 | 2.52 | 7.43 (3.28–16.83) | .60 |
| Hispanic ($n_1 = 8,545$; $n_2 = 7,063$; $n_3 = 11,210$; $n_4 = 16,269$) | 0.78 | 0.29 | 0.86 | 1.44 | 3.27 (0.92–11.59) | .04 |
| Primary payment source | | | | | | |
| Private insurance ($n_1 = 59,576$; $n_2 = 58,644$; $n_3 = 60,381$; $n_4 = 74,236$) | 0.47 | 0.49 | 1.11 | 2.23 | 10.14 (7.28–14.13) | |
| Medicare ($n_1 = 19,831$; $n_2 = 21,983$; $n_3 = 20,808$; $n_4 = 18,159$) | 0.62 | 0.78 | 1.69 | 3.96 | 14.63 (9.69–22.10) | .12 |
| Medicaid ($n_1 = 8,256$; $n_2 = 6,831$; $n_3 = 10,609$; $n_4 = 15,490$) | 0.98 | 0.80 | 1.72 | 2.27 | 3.51 (1.67–7.37) | .004 |
| Self-pay/other ($n_1 = 27,316$; $n_2 = 12,513$; $n_3 = 11,925$; $n_4 = 16,022$) | 1.00 | 0.79 | 1.40 | 3.73 | 5.31 (1.57–17.95) | .28 |
| Patient status | | | | | | |
| First visit ($n_1 = 18,405$; $n_2 = 15,242$; $n_3 = 15,219$; $n_4 = 19,343$) | 0.29 | 0.24 | 0.93 | 2.38 | 23.36 (11.82–46.17) | .004 |
| Return visit ($n_1 = 96,081$; $n_2 = 84,157$; $n_3 = 90,668$; $n_4 = 105,213$) | 0.70 | 0.66 | 1.36 | 2.67 | 7.26 (4.38–12.03) | |

[a]National Ambulatory Medical Care Survey data. Results are presented as weighted percentages.
[b]For each variable, $n_1$ refers to number of surveyed visits in 1995–1998, $n_2$ refers to number of surveyed visits in 1999–2002, $n_3$ refers to number of surveyed visits in 2003–2006, and $n_4$ refers to number of surveyed visits in 2007–2010.
[c]OR denotes odds ratio associated with the transformed survey year variable: [survey year – 1995]/15.
[d]Interaction $P$ values refer to probabilities associated with characteristic group × year interactions. Within a given characteristic, dichotomous variables were defined by row groups with and without $P$ values.

**Table 2. Trends in Medical Visits With Prescription of a Schedule II Opioid, Stratified by Clinical Characteristics, in the United States in 1995–2010[a]**

| Characteristic[b] | 1995–1998, % | 1999–2002, % | 2003–2006, % | 2007–2010, % | OR (95% CI)[c] | Interaction *P*[d] |
|---|---|---|---|---|---|---|
| Pain as first reason for visit | | | | | | |
| Yes ($n_1$ = 25,089; $n_2$ = 20,335; $n_3$ = 19,922; $n_4$ = 22,689) | 0.98 | 1.12 | 2.70 | 5.50 | 11.61 (8.51–15.84) | .16 |
| No ($n_1$ = 89,890; $n_2$ = 80,785; $n_3$ = 85,965; $n_4$ = 101,867) | 0.56 | 0.48 | 0.97 | 1.96 | 6.74 (3.30–13.75) | |
| Type of pain | | | | | | |
| Head/neck ($n_1$ = 8,933; $n_2$ = 7,497; $n_3$ = 7,804; $n_4$ = 8,981) | 0.77 | 1.11 | 1.97 | 2.91 | 5.85 (3.30–10.36) | .34 |
| Chest ($n_1$ = 2,217; $n_2$ = 1,640; $n_3$ = 1,633; $n_4$ = 1,952) | 0.78 | 0.64 | 2.13 | 2.47 | 5.45 (2.64–11.26) | .37 |
| Abdominal/pelvic ($n_1$ = 3,944; $n_2$ = 3,263; $n_3$ = 3,225; $n_4$ = 3,921) | 1.02 | 1.03 | 2.17 | 3.70 | 7.12 (4.06–12.49) | .74 |
| Back ($n_1$ = 4,241; $n_2$ = 3,430; $n_3$ = 3,497; $n_4$ = 4,405) | 1.89 | 2.92 | 6.23 | 13.19 | 13.23 (8.38–20.89) | .09 |
| Extremities ($n_1$ = 7,381; $n_2$ = 6,003; $n_3$ = 5,698; $n_4$ = 6,783) | 0.69 | 0.73 | 2.41 | 5.37 | 19.08 (11.96–30.42) | .004 |
| Unspecified ($n_1$ = 7,956; $n_2$ = 6,990; $n_3$ = 6,823; $n_4$ = 7,679) | 0.83 | 1.12 | 2.12 | 6.33 | 18.70 (11.53–30.33) | .007 |
| Disposition | | | | | | |
| No follow-up ($n_1$ = 4,712; $n_2$ = 7,568; $n_3$ = 6,551; $n_4$ = 3,066) | 0.41 | 0.49 | 0.70 | 1.85 | 7.14 (1.58–32.30) | .77 |
| Other ($n_1$ = 62,213; $n_2$ = 93,552; $n_3$ = 99,336; $n_4$ = 57,980) | 0.80 | 0.61 | 1.35 | 2.59 | 9.14 (3.51–23.82) | |
| Physician specialty | | | | | | |
| Primary care ($n_1$ = 40,933; $n_2$ = 33,262; $n_3$ = 37,318; $n_4$ = 51,229) | 0.47 | 0.61 | 1.46 | 2.51 | 9.27 (7.03–12.23) | .54 |
| Other ($n_1$ = 74,046; $n_2$ = 67,858; $n_3$ = 68,569; $n_4$ = 73,327) | 0.85 | 0.60 | 1.15 | 2.75 | 6.92 (2.82–16.96) | |
| Selected medical or mental health problem | | | | | | |
| Low back pain ($n_1$ = 2,228; $n_2$ = 2,034; $n_3$ = 2,334; $n_4$ = 3,275) | 2.40 | 3.16 | 8.06 | 14.73 | 13.90 (8.36–23.11) | .07 |
| Cancer ($n_1$ = 5,868; $n_2$ = 5,263; $n_3$ = 6,053; $n_4$ = 7,612) | 1.53 | 1.89 | 2.20 | 4.08 | 3.94 (2.06–7.55) | .05 |
| Substance use ($n_1$ = 981; $n_2$ = 657; $n_3$ = 854; $n_4$ = 1,377) | 20.29 | 1.05 | 4.00 | 5.89 | 0.10 (0.00–3.30) | .009 |
| Depression ($n_1$ = 4,430; $n_2$ = 4,067; $n_3$ = 4,333; $n_4$ = 4,183) | 0.43 | 0.81 | 2.43 | 3.33 | 9.96 (5.45–18.21) | .57 |
| Anxiety ($n_1$ = 1,937; $n_2$ = 1,994; $n_3$ = 2,553; $n_4$ = 2,804) | 0.08 | 0.71 | 1.90 | 2.27 | 10.99 (5.02–24.06) | .49 |

[a]National Ambulatory Medical Care Survey data. Results are presented as weighted percentages.
[b]For each variable, $n_1$ refers to number of surveyed visits in 1995–1998, $n_2$ refers to number of surveyed visits in 1999–2002, $n_3$ refers to number of surveyed visits in 2003–2006, and $n_4$ refers to number of surveyed visits in 2007–2010.
[c]OR denotes odds ratio associated with the transformed survey year variable: [survey year – 1995]/15.
[d]Interaction *P* values refer to probabilities associated with characteristic group × year interactions. Within a given characteristic, dichotomous variables were defined by row groups with and without *P* values.

### First-Visit Patients Versus Returning Patients

As compared with returning patients who received opioid prescriptions, first-visit patients who received opioids tended to be younger and were much less likely to have been treated by a primary care physician. First-visit patients with opioid prescriptions were also significantly less likely to be diagnosed with back pain, depression, or anxiety than were return-visit patients with opioid prescriptions (Table 3).

### Opioid Use in Visits and Complaints of Pain

In relation to visits that involved opioids and non–pain-related complaints, visits that included opioids for pain complaints were more likely to be made by younger patients and by patients without private insurance, Medicare, or Medicaid. Cancer, substance use disorders, and depression were significantly less common when pain was the primary reason for the visit (Table 4). In post hoc analyses over the entire study period (1995–2010), psychiatrists prescribed opioids in 5.7% and nonpsychiatrists in 6.7% of visits by patients with a pain complaint and a depression diagnosis ($P = .65$). Psychiatrists prescribed opioids in 3.0% and nonpsychiatrists in 4.0% of visits by patients with a pain complaint and an anxiety disorder diagnosis ($P = .50$).

## DISCUSSION

Over the last several years, there has been a substantial increase in prescription of Schedule II opioids in office-based practice. The increase was particularly rapid among adults aged ≥ 36 years and among patients making their first visit to a physician. Young adults, who as a group are at increased risk of nonmedical use and abuse of prescription opioids,[8,10] experienced more modest growth in opioid prescriptions; children and adolescents had no significant increase; and patients with substance use disorders,[9,12] who are at especially high risk of opioid misuse, became less likely to receive opioid prescriptions.

Several factors may have contributed to the recent increase in opioid treatment. Widespread clinical concern over undertreatment of pain[21] and the publication of clinical guidelines encouraging physicians to adequately manage pain[22,23] may have played a role in the increase. In addition, the US Food and Drug Administration approved new oral formulations of fentanyl (1993), oxycodone (1995), and hydromorphone (1998). These and other prescription opioids were heavily promoted to physicians by pharmaceutical companies.[24,25] Safety concerns related to some cyclooxygenase inhibitors[26] may have further increased clinical reliance on opioids. Real-time prescription monitoring programs[27] and the availability of abuse-resistant opioid formulations might have bolstered the willingness of some physicians to prescribe opioids.[28] Abuse-resistant opioids, such as extended-release oxymorphone and the osmotic extended-release oral delivery system of hydromorphone, have crush-resistant properties that reduce the likelihood that the opioids can be misused through injection or snorting.

Visits by older patients had the fastest growth in opioid prescriptions, and visits by adults aged 36–64 years were the most likely to include an opioid. Although nonmedical use of prescription opioids in the general population is heavily concentrated among adolescents and young adults,[8,10,29] older

**Table 3. Demographic and Clinical Characteristics for Office-Based Physician Visits That Included Prescription of a Schedule II Opioid Shown by Visit Status in the United States in 2003–2010[a]**

| Characteristic | First-Visit Patients (no. visits = 576), % | Return-Visit Patients (no. visits = 4,249), % | $\chi^2$ Statistic | *P* Value |
|---|---|---|---|---|
| Age, y | | | 4.17 | .006 |
| ≤ 17 | 1.70 | 0.87 | | |
| 18–35 | 21.85 | 11.87 | | |
| 36–64 | 58.16 | 61.54 | | |
| 65+ | 18.29 | 25.72 | | |
| Sex | | | 2.71 | .10 |
| Male | 47.90 | 42.08 | | |
| Female | 52.10 | 57.92 | | |
| Race/ethnicity | | | 2.61 | .07 |
| White, non-Hispanic[b] | 79.26 | 84.34 | | |
| Black, non-Hispanic | 10.82 | 9.19 | | |
| Hispanic | 9.92 | 6.46 | | |
| Primary source of payment | | | 3.06 | .03 |
| Private insurance | 56.79 | 53.08 | | |
| Medicare | 15.04 | 23.58 | | |
| Medicaid | 11.75 | 10.44 | | |
| Self-pay/other | 16.41 | 12.91 | | |
| Primary complaint | | | 0.59 | .44 |
| Pain | 36.38 | 40.23 | | |
| Other | 63.62 | 59.77 | | |
| Selected diagnosis/problem | | | | |
| Low back pain | 10.41 | 16.13 | 4.44 | .04 |
| Cancer | 5.68 | 7.56 | 1.14 | .29 |
| Substance use | 1.41 | 1.87 | 0.55 | .46 |
| Depression | 0.64 | 4.69 | 21.96 | < .0001 |
| Anxiety | 0.65 | 2.14 | 7.66 | .006 |
| Physician specialty | | | 10.67 | < .0001 |
| Primary care | 25.37 | 54.14 | | |
| Psychiatry | 0.72 | 1.73 | | |
| Other | 73.91 | 44.13 | | |
| Opioid prescribed | | | | |
| Oxycodone | 41.39 | 52.24 | 3.44 | .06 |
| Fentanyl | 8.40 | 11.24 | 1.67 | .20 |
| Hydromorphone | 2.95 | 4.34 | 1.17 | .28 |
| Hydrocodone | 21.03 | 14.78 | 3.48 | .06 |
| Meperidine | 12.91 | 4.52 | 0.93 | .33 |
| Other[c] | 16.75 | 20.90 | 1.98 | .16 |

[a]National Ambulatory Medical Care Survey data. Results are presented as weighted percentages.
[b]Includes white, Asian, Native Hawaiian or Other Pacific Islander, and American Indian or Alaska Native.
[c]Other includes oxymorphone, morphine, opium, methadone, levorphanol, diphenoxylate, alphaprodine, cocaine, and glutethimide.

adults are at the greatest risk of nonmedical use of opioids prescribed directly from their physician.[30] Older patients may have more opportunities to receive prescription opioids than younger patients because they make more physician visits[31] and more often experience somatic pain.[32] In addition to an ongoing emphasis on detection and treatment of problematic opioid use among young people,[33,34] a balanced approach requires careful consideration of the risks of nonmedical opioid use by older patients as well, particularly in the context of recent increases in the number of fatal poisonings among older Americans that involved opioid analgesics.[35]

In contrast to visits by non-Hispanic patients, there was no significant increase in opioid prescriptions during visits by Hispanic patients. In several health settings, Hispanics are less likely than non-Hispanic whites to receive analgesics to manage pain.[36] This disparity, which has also been reported for African Americans in relation to whites,[37] may reflect ethnic/racial group differences in pain perception[38] or a greater reluctance to prescribe opioids to minority patients borne of a stereotype that opioid abuse is more common among racial and ethnic minority patients,[39] despite empirical evidence to the contrary.[12]

Individuals with substance use disorders are well known to be at high risk for prescription opioid misuse,[9] abuse, and dependence.[11,12] Unlike visits by patients without substance use disorders, which became more likely to include opioid prescriptions during the study period, visits by patients with substance use disorders became less likely to involve opioid prescriptions. There may have been an increase in physician awareness of the risks of opioid abuse in this patient population.[40]

Adults with anxiety and depressive disorders are also at elevated risk of nonmedical use of prescription opioids.[8,10] Longitudinal epidemiologic data support complex bidirectional associations with generalized anxiety disorder and depression related to incident nonmedical prescription opioid use as well as nonmedical use of prescription opioids related to the onset of depression and various anxiety

**Table 4. Demographic and Clinical Characteristics for Office-Based Physician Visits That Included Prescription of a Schedule II Opioid for Patients With and Without Pain as the Primary Reason for the Visit in the United States in 2003–2010[a]**

| Characteristic | With Pain as Primary Reason for Visit (no. visits = 1,879), % | Without Pain as Primary Reason for Visit (no. visits = 2,946), % | $\chi^2$ Statistic | *P* Value |
|---|---|---|---|---|
| Age, y | | | 8.03 | < .0001 |
| ≤ 17 | 0.65 | 1.16 | | |
| 18–35 | 15.19 | 11.52 | | |
| 36–64 | 65.37 | 58.39 | | |
| 65+ | 18.79 | 28.93 | | |
| Sex | | | 0.01 | .93 |
| Male | 42.85 | 42.65 | | |
| Female | 57.15 | 57.35 | | |
| Race/ethnicity | | | 2.33 | .10 |
| White, non-Hispanic[b] | 85.82 | 82.43 | | |
| Black, non-Hispanic | 8.47 | 9.97 | | |
| Hispanic | 5.70 | 7.60 | | |
| Primary source of payment | | | 5.43 | .001 |
| Private insurance | 53.67 | 53.37 | | |
| Medicare | 18.71 | 25.22 | | |
| Medicaid | 9.42 | 11.36 | | |
| Self-pay/other | 18.21 | 10.05 | | |
| Visit status | | | 0.59 | .44 |
| New patient | 10.14 | 11.72 | | |
| Returning patient | 89.86 | 88.28 | | |
| Selected diagnosis/problem | | | | |
| Low back pain | 23.57 | 10.16 | 37.74 | < .0001 |
| Cancer | 2.83 | 10.34 | 30.12 | < .0001 |
| Substance use | 0.79 | 2.50 | 7.27 | .007 |
| Depression | 3.23 | 4.91 | 3.92 | .048 |
| Anxiety | 1.43 | 2.33 | 3.49 | .06 |
| Physician specialty | | | 1.47 | .23 |
| Primary care | 52.37 | 49.98 | | |
| Psychiatry | 0.99 | 2.03 | | |
| Other | 46.64 | 47.99 | | |
| Opioid prescribed | | | | |
| Oxycodone | 57.11 | 47.01 | 11.52 | .0007 |
| Fentanyl | 8.95 | 12.23 | 3.94 | .047 |
| Hydromorphone | 4.95 | 3.67 | 2.35 | .13 |
| Hydrocodone | 14.06 | 16.41 | 2.27 | .13 |
| Meperidine | 4.50 | 6.08 | 0.51 | .47 |
| Other[c] | 19.03 | 21.37 | 1.08 | .30 |

[a]National Ambulatory Medical Care Survey data. Results are presented as weighted percentages.
[b]Includes white, Asian, Native Hawaiian or Other Pacific Islander, and American Indian or Alaska Native.
[c]Other includes oxymorphone, morphine, opium, methadone, levorphanol, diphenoxylate, alphaprodine, cocaine, and glutethimide.

disorders.[8,41] Because of the vulnerability to opioid use among patients diagnosed with anxiety or depression disorders, the growth in opioid prescription to these patients may merit particular clinical scrutiny. This concern may be especially true in relation to depressed patients because, in this study, opioid prescriptions tended to be written in visits in which pain was not the primary reason for the visit.

There was also a marked increase in opioid prescriptions in visits involving low back pain. Although prescription opioids may be effective for short-term relief of low back pain, their efficacy in long-term back-pain management is less clear.[42] Because nonmedical use of prescription opioids is common among patients with long-term back pain[42,43] and most of the opioid prescriptions related to back pain are for long-term problems, clinical care should be exercised in the selection of medications to manage pain in this complicated condition.

Opioid prescriptions increased significantly faster among first visits than return visits. The rapid rise in opioid prescriptions during first visits may represent an appropriate response to historical delays and barriers to pain care,[44] shorter opioid treatment episodes with proportionately more first visits, or an overly rapid escalation in pharmacologic pain management. Detailed longitudinal practice-based research could help determine the extent to which community physicians employ an orderly sequence of nonopioid analgesic medications followed by weak opioids if the pain is not properly controlled before considering strong opioids.[45]

First visits compared with return visits with opioid prescriptions included a significantly greater proportion of younger patients, a demographic group associated with nonmedical use of, abuse of, and dependence on prescription opioids.[12] In some first patient visits, physicians may be caught between responding to patient treatment preferences while honoring principles of responsible pain management.[46] As compared to return visits with opioid prescriptions, however, first visits with opioid prescriptions did not include a greater proportion of patients with substance use disorders, as would be expected if this group had higher abuse liability.[12]

A significant increase in opioid treatment extended to visits in which pain was not the primary reason for the visit. These visits involved patients who tended to be older than the opioid-treated patients who had pain as their primary complaint. Because physicians are often the direct source of opioids for older patients with nonmedical opioid use,[30] it may be particularly important to regularly reassess the clinical need for opioids in this patient population.

The analyses have several limitations. First, physician nonresponse raises the potential for survey response bias. Second, absence of information concerning dose and duration of opioid prescriptions, use by patients who seek opioids from multiple physicians, or patients who seek early refills limits characterization of patients at high risk for opioid abuse or diversion.[47] Third, the diagnoses were based on clinician judgment without expert validation by standardized diagnostic assessment, and clinical diagnostic practices may have changed over the study period. Fourth, the surveys are restricted to office-based medical visits and therefore do not capture visits to emergency departments, hospital outpatient clinics, cancer centers, and various other outpatient settings where opioids are prescribed. The surveys also do not capture most nonmedical use of prescription opioids, which is by individuals who do not obtain the drugs directly from a physician but rather from friends, relatives, drug dealers, and other nonphysician sources.[7]

An increase in opioid prescribing in office-based medical practice supports calls to increase physician training in the principles of responsible pain management. Greater caution regarding opioid prescription has been urged by prominent pain management specialists, addiction researchers, and public health officials.[48,49] The most impressive growth in opioid prescribing occurred not among patient groups that conform to clinical stereotypes of opioid misuse, such as adolescents, young adults, and patients with substance use disorders, but rather among older adults and patients with pain in their extremities or with poorly localized pain. In order to ensure safe pain management, physicians should remain vigilant for clinical indications of problematic opioid use in all of their opioid-treated patients, routinely counsel these patients concerning the risks of abuse and overdose, and emphasize the importance of proper disposal of opioid pills and capsules that are no longer necessary. Although psychiatrists account for only a small proportion of prescribed opioids in office-based medical practice, they have an important role to play in the evaluation and management of patients with prescription opioid use disorders.[50] Key challenges ahead involve sharpening the clinical assessment of pain control and the vulnerability to nonmedical opioid use.

***Drug names:*** atropine (Atropen and others), carbinoxamine (Karbinal ER and others), fentanyl (Duragesic, Subsys, and others), hydromorphone (Dilaudid, Exalgo, and others), ibuprofen (Caldolor, Ibu-Tab, and others), meperidine (Demerol and others), methadone (Methadose, Dolophine, and others), morphine (Kadian, Avinza, and others), oxycodone (Oxycontin, Oxecta, and others), oxymorphone (Opana, Opana ER, and others), remifentanil (Ultiva), sufentanil (Sufenta and others).

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*Research Article*

# PROSPECTIVE STUDY OF SUBSTANCE-INDUCED AND INDEPENDENT MAJOR DEPRESSIVE DISORDER AMONG INDIVIDUALS WITH SUBSTANCE USE DISORDERS IN A NATIONALLY REPRESENTATIVE SAMPLE

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**Background:** *Depression and substance use disorders (SUDs) commonly co-occur, which presents diagnostic challenges in classifying independent major depressive disorder (MDD) versus substance-induced depressive disorder (SIDD). It remains unclear if distinct characteristics and/or patterns in temporal course distinguish MDD-SUD and SIDD to guide these decisions. Further, evidence suggests that a significant portion of individuals with SIDD are later reclassified as having independent MDD. Continued research to improve our understanding of differences between these two and changes in reclassification over time is necessary for diagnostic clarification and to guide clinical decisions when treating depression in the context of SUDs.* **Methods:** *The current study compared individuals with MDD-SUD versus SIDD at baseline and examined reclassification of DSM-IV Axis I diagnoses over a 3-year follow up in a large, nationally representative epidemiological sample (n = 2,121).* **Results:** *Findings demonstrated that SIDD was extremely rare at both time points. At baseline, individuals with SIDD were more likely to be non-White, have less education, less likely to have insurance, less likely to have dysthymia or alcohol abuse, and more likely to have drug dependence compared to those with independent MDD. Of individuals with SIDD at Wave 1 who had a depressive episode between Waves 1 and 2, the overwhelming majority (>95%) had an independent MDD, not SIDD, episode. There were no significant group differences in the incidence of other mood disorders or SUDs at Wave 2.* **Conclusions:** *Findings have important etiological and treatment implications for the classification and treatment of depression in the context of SUDs. Depression and Anxiety 30:538–545, 2013.* 

**Key words:** *major depressive disorder; substance-related disorder; classification; epidemiology; substance use*

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# INTRODUCTION

Depression is highly prevalent among individuals with substance use disorders (SUDs) and associated with high rates of additional psychiatric comorbidity, more severe course of both disorders, greater impairment, poorer functioning, and higher risk of suicide than individuals with either disorder alone.[1–5] The co-occurrence of SUD and depression raises some important diagnostic challenges. In particular, there has been disagreement regarding how to best distinguish between independent major depressive disorder (MDD; i.e. a depressive episode that is primary or independent from the SUD) versus substance-induced depressive disorder (SIDD; i.e. a depressive episode that is determined to be etiologically linked to substance use).[3–5] To guide this distinction, DSM-IV-based assessments include targeted questions about the temporal relationship between substance use (intoxication and/or withdrawal) and the depressive episode; depressive symptoms that begin prior to the onset of an SUD or during extended abstinence are typically diagnosed as an independent MDD episode, whereas depressive symptoms that only occur in the context of substance use and exceed the expected pharmacological effects of the particular substance are typically diagnosed as SIDD.[4] However, controversy remains regarding this distinction, particularly given evidence that individuals initially diagnosed with SIDD are often later reclassified as having independent MDD.[6] This is an important distinction for developing guidelines for optimal management and treatment of depression, particularly when deciding whether to initiate specific antidepressant treatment in this context.

Several studies comparing the characteristics of substance dependent individuals with MDD versus SIDD have aimed to distinguish between SIDD and independent MDD. Those studies have suggested there may be distinct risk factors, including more severe depression-related characteristics as predictive of an independent MDD episode[7–9] whereas greater substance use severity and frequency being associated with SIDD.[10,11] There is also some evidence that independent MDD episodes versus SIDD predict distinct substance use outcomes over time; current SIDD has been shown to decrease the likelihood of dependence remission, whereas current independent MDD has been shown to increase risk of substance use relapse following a period of remission.[3,12]

Despite findings indicating that there may be some distinct risk factors and differences in temporal course of independent MDD versus SIDD, other studies comparing individuals with independent MDD and SIDD have identified few differences across groups in terms of comorbidity, risk factors, and sociodemographic differences.[1,13] Furthermore, longitudinal studies have found that over the course of abstinence, a significant portion of individuals originally classified as having SIDD are later reclassified[1] as having independent MDD episodes. Ramsey et al. (2004)[14] assessed treatment-seeking individuals with alcohol dependence ($n = 95$) over a 1-year follow up and found that over 25% of episodes originally classified as substance induced were reclassified as having independent MDD. Nunes et al. (2006)[6] also examined the course of depression over a 1-year period among treatment-seeking individuals with SUD ($n = 110$), and similar to the findings of Ramsey et al. (2004), at the follow up patients with SIDD at baseline tended to be reclassified as having independent MDD (from 51% with SIDD at baseline to only 14.3% at the follow up). Additionally, few people with MDD at baseline were reclassified as having SIDD over the one year follow up period (14.8%).[6]

Given the high rates of reclassification from SIDD to MDD and lack of consensus regarding distinctions between these two disorders, it is important to continue to examine these distinctions and rates of reclassification over time. In particular, there are numerous limitations of previous studies that must be addressed in order to draw firm conclusions from this line of work. Research has largely been constrained by reliance on treatment-seeking samples,[3,6–8,12,14] cross-sectional designs,[7,8,11] relatively small sample sizes and/or short follow-up periods,[6,8,14] or a primary focus on individuals with alcohol use disorders (AUDs) as opposed to other SUDs.[9,10] Studies that overcome these limitations are essential to determine the clinical utility of the SIDD diagnosis, to develop appropriate treatment guidelines, and to improve the management of depression and related treatment decisions in this population.

We sought to address previous study limitations by comparing individuals with MDD-SUD versus SIDD at baseline and examining reclassification over a 3-year follow up in a large, nationally representative epidemiological sample. Specific aims were to compare MDD-SUD and SIDD groups on demographic and clinical characteristics at baseline, and examine rates of reclassification from SIDD to MDD and group differences in the incidence of new Axis I disorders between Waves.

# MATERIALS AND METHOD

## PARTICIPANTS AND PROCEDURE

The NESARC Wave 1 target population consisted of civilian, noninstitutionalized adult individuals over 18 years of age residing in households and group quarters. The survey included individuals residing the continental United States, District of Columbia, Alaska, and Hawaii. African Americans, Hispanics, and individuals aged 18–24 years of age were oversampled, and data were adjusted to reflect design

[1] Reclassification throughout the manuscript refers to a change in diagnostic classification at a later assessment point not due to error but rather a change in symptom profile over time.

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characteristics of the NESARC survey and to account for oversampling and nonresponse. Face-to-face interviews were conducted by lay interviewers with extensive training and supervision.[15,16] The research protocol and informed consent given to all respondents prior to interviews were approved the U.S. Census Bureau and the U.S. Office of Management and Budget and were in line with the latest version of the Declaration of Helsinki. Informed consent was obtained after the study procedures were fully explained. The Wave 2 interview was conducted approximately 3 years later (mean interval: 36.6 months). Excluding ineligible respondents (e.g. deceased), the Wave 2 response rate was 86.7%, resulting in 34,653 completed interviews. Sample weights were also developed to adjust for Wave 2 nonresponse.[16] In Wave 1, 2,387 respondents met criteria for lifetime DSM-IV MDD and SUD, and 106 met criteria for lifetime SIDD. Of these, 2,121 participated in Wave 2 (MDD-SUD = 2,033; SIDD = 88) and constitute the sample of the present study.

### ASSESSMENTS

The diagnostic interview used to determine DSM-IV Axis I disorders was the Alcohol Use Disorder and Associated Disabilities Interview Schedule DSM-IV version (AUDADIS-IV).[17] The AUDADIS-IV is a structured diagnostic interview designed for lay professional interviewers to measure substance use and mental disorders in large-scale surveys. Computer algorithms were used to diagnose all DSM-IV Axis I disorders. In Wave 1, lifetime and 12-month diagnoses were obtained for all Axis I disorders included in the current study. At Wave 2, criteria for all Axis I disorders were assessed spanning the time period in between Waves 1 and 2. Test-retest reliability and validity of the AUDADIS-IV measures of the DSM-IV disorders are adequate and have been reported in detail elsewhere.[15,18,20]

### SUBSTANCE USE DISORDERS

The AUDADIS-IV operationalizes DSM-IV criteria for alcohol and drug abuse and dependence for 10 drug classes (aggregated in this report).[15] Consistent with DSM-IV, diagnoses of alcohol and substance abuse using the AUDADIS-IV require at least one of the four abuse criteria during a 12-month period. For dependence (alcohol and other substances), diagnoses require at least three of the seven DSM-IV criteria for dependence during a 12-month period. The AUDADIS-IV has shown good to excellent inter-rater and test-retest reliability ($k$ = 0.70–0.84) and validity for SUD diagnoses.[18] SUDs were assessed at both Waves. Respondents were also asked at Wave 2 to self-report abstinence between waves (i.e. whether they had used any alcohol or drugs since the last interview).

### MDD AND SIDD

Lifetime MDD at Wave 1 was defined as having at least one major depressive episode in one's lifetime without history of manic, mixed, or hypomanic episodes. The DSM-IV MDD diagnosis excludes substance-induced episodes, those due to a general medical condition, or to bereavement.[19] In differentiating SIDD from an independent MDD episode, the AUDADIS interview included specific questions about the temporal relationship between intoxication or withdrawal and the full depressive syndrome.[4,15,21] Specifically, SIDD was diagnosed when the depressive symptoms assessed in the MDD module lasted 1 month or less and occurred during a period when the respondent was drinking heavily or more than usual, using drugs, had recently stopped drinking (i.e. within 1 month), or experiencing any withdrawal symptoms. Example questions included in the AUDADIS to differentiate SIDD and independent MDD specifically include more details about timing of depressive and drinking/drug use episodes (e.g. did any [of the depressive episodes] begin after you were drinking heavily or a lot more than usual/or using drugs?; did any [of the depressive episodes] begin during a period when you were experiencing the bad after effects of drinking/drugs? did you continue to experience [the endorsed depressive symptoms] for at least one month after any of these times?). To ensure a stringent test of differences between MDD and SIDD, respondents were classified as having lifetime SIDD if all their depressive episodes were substance-induced and they had no history of MDD. The test-retest reliability and validity of the AUDADIS-IV measure of lifetime MDD are good.[20] MDD and SIDD were assessed at both Waves.

### OTHER MOOD AND ANXIETY DISORDERS

The AUDADIS-IV was also used to assess other mood (dysthymia, bipolar I, bipolar II) and anxiety (panic disorder, social anxiety disorder, specific phobia, and generalized anxiety disorder) disorders at Wave 1 and Wave 2. All diagnoses reported were "primary" such that they exclude disorders characterized as "substance-induced" or due to a general medical condition, and they all met the clinical significance criterion.

### TREATMENT UTILIZATION

Treatment utilization for depression was assessed at both Waves. At Wave 1, respondents were asked whether they had ever sought help for their low mood. At Wave 2, respondents were asked if they sought help for their low mood since the last interview.

### STATISTICAL ANALYSES

Weighted percentages and means were computed to derive sociodemographic characteristics, lifetime prevalence of Axis I disorders at Wave 1, reclassification of SUDs, MDD, and SIDD at Wave 2, incidence of other new Axis I disorders at Wave 2, depression treatment utilization at Waves 1 and 2, and abstinence rates at Wave 2. A set of logistic regression analyses yielded odds ratios (ORs) and 95% confidence intervals (CIs) indicating measures of association between MDD-SUD and SIDD and lifetime comorbid psychiatric disorders and diagnostic status at Wave 2. Odds ratios were further adjusted for those sociodemographic characteristics of the sample at Wave 1 that were significantly different between the groups in the univariate analyses (Table 1). Analyses were estimated using SUDAAN to adjust for the design effects of the NESARC.

## RESULTS

### SOCIODEMOGRAPHIC CHARACTERISTICS

Table 1 shows the sociodemographic characteristics of individuals with MDD-SUD and SIDD at Wave 1. Individuals with SIDD were significantly more likely than individuals with MDD-SUD to be non-White, have less than or equal to a high school educational level, and less likely to have insurance.

### LIFETIME PREVALENCE OF PSYCHIATRIC COMORBIDITY

Table 2 shows the lifetime prevalence of Axis I disorders at Wave 1 among individuals with MDD-SUD and SIDD at Wave 1. Individuals with SIDD were significantly less likely than those with MDD-SUD to meet criteria for an AUD, specifically alcohol abuse, but significantly more likely to meet criteria for a drug use disorder, specifically drug dependence. Individuals with

**TABLE 1. Sociodemographic characteristics of individuals diagnosed with MDD-SUD and SIDD at Wave 1**

| Characteristic | Lifetime SIDD at Wave 1 ($n = 88$) % | SE | Lifetime MDD-SUD at Wave 1 ($n = 2033$) % | SE | OR (95%CI) | *P*-value |
|---|---|---|---|---|---|---|
| Sex | | | | | | |
| Male | 46.51 | 6.54 | 45.61 | 1.44 | 1.04 (0.61–1.77) | 0.893 |
| Female | 53.49 | 6.54 | 54.39 | 1.44 | 1.00 (1.00–1.00) | – |
| Race/ethnicity | | | | | | |
| White | 65.31 | 6.05 | 81.58 | 1.40 | 1.00 (1.00–1.00) | – |
| Non-White | 34.69 | 6.05 | 18.42 | 1.40 | 2.35 (1.38–4.00) | 0.002 |
| US-born | | | | | | |
| Yes | 93.04 | 3.47 | 95.12 | 0.85 | 1.00 (1.00–1.00) | – |
| No | 6.96 | 3.47 | 4.88 | 0.85 | 1.46 (0.48–4.38) | 0.498 |
| Age | | | | | | |
| 18–29 | 25.07 | 5.35 | 20.27 | 1.17 | 1.00 (1.00–1.00) | – |
| 30–44 | 42.41 | 6.42 | 39.32 | 1.40 | 0.87 (0.45–1.68) | 0.678 |
| 45–64 | 23.79 | 5.81 | 35.84 | 1.37 | 0.54 (0.25–1.17) | 0.116 |
| 65+ | 8.73 | 3.14 | 4.57 | 0.55 | 1.55 (0.59–4.03) | 0.368 |
| Education | | | | | | |
| <High school | 21.17 | 6.06 | 10.62 | 0.85 | 2.94 (1.32–6.55) | 0.009 |
| High school | 34.94 | 5.69 | 24.69 | 1.23 | 2.09 (1.25–3.48) | 0.006 |
| College | 43.88 | 5.86 | 64.69 | 1.41 | 1.00 (1.00–1.00) | – |
| Employment status | | | | | | |
| Yes | 63.54 | 6.17 | 74.03 | 1.18 | 0.61 (0.35–1.06) | 0.081 |
| No | 36.46 | 6.17 | 25.97 | 1.18 | 1.00 (1.00–1.00) | – |
| Individual income | | | | | | |
| <20,000 | 51.70 | 6.51 | 41.84 | 1.38 | 1.00 (1.00–1.00) | – |
| 20,000–34,999 | 18.52 | 4.38 | 23.80 | 1.24 | 0.63 (0.33–1.20) | 0.157 |
| 35,000–70,000 | 23.04 | 5.56 | 25.38 | 1.32 | 0.73 (0.36–1.49) | 0.386 |
| >70,000 | 6.74 | 2.82 | 8.98 | 0.80 | 0.61 (0.24–1.56) | 0.294 |
| Marital status | | | | | | |
| Married | 54.16 | 5.97 | 55.38 | 1.40 | 1.00 (1.00–1.00) | – |
| Widowed/separated/divorced | 20.02 | 5.82 | 24.75 | 1.10 | 0.83 (0.39–1.73) | 0.610 |
| Never married | 25.81 | 5.42 | 19.86 | 1.12 | 1.33 (0.74–2.40) | 0.340 |
| Urbanicity | | | | | | |
| Urban | 75.35 | 6.25 | 77.94 | 1.89 | 1.00 (1.00–1.00) | – |
| Rural | 24.65 | 6.25 | 22.06 | 1.89 | 1.16 (0.62–2.17) | 0.648 |
| Insurance | | | | | | |
| Private | 55.13 | 6.73 | 72.01 | 1.20 | 1.00 (1.00–1.00) | – |
| Public | 10.75 | 4.20 | 10.41 | 0.83 | 1.35 (0.53–3.44) | 0.524 |
| No insurance | 34.12 | 5.96 | 17.59 | 1.10 | 2.53 (1.39–4.62) | 0.003 |

SIDD were significantly less likely to meet criteria for dysthymia compared to individuals with MDD-SUD.

## RECLASSIFICATION OF SIDD AND MDD-SUD

Table 3 shows the rates of reclassification of SIDD and independent MDD episodes at Wave 2. SIDD was rare at both time points. The most common classification at Wave 2 regardless of Wave 1 diagnosis was no new episodes or an independent MDD episode. Specifically, among individuals diagnosed with SIDD at Wave 1 ($n = 88$), 71.27% were reclassified as having no depressive episode at Wave 2, 27.32% were reclassified as having an independent MDD episode, only .77% were again classified as having SIDD, and .64% were classified as having had both SIDD and an independent MDD episode. This indicates that among individuals classified in Wave 1 as having SIDD who had at least one depressive episode between Waves, 95.1% had an independent MDD episode, whereas only 2.7% had an SIDD episode, and 2.2% had both an SIDD episode and an independent MDD episode.

## INCIDENCE OF NEW AXIS I DISORDERS AT WAVE 2

Table 4 shows the incidence of new Axis I disorders at Wave 2 among individuals with MDD-SUD and SIDD at Wave 1. There were no differences across groups in any new Axis I disorder, any AUD, drug use disorder, nicotine dependence, or mood disorder. In the adjusted model (but not unadjusted), individuals with MDD-SUD were more likely to meet criteria for specific phobia at Wave 2. There were no

**TABLE 2. Lifetime history of psychiatric disorders of individuals diagnosed with MDD-SUD and SIDD at Wave 1**

| Psychiatric comorbidity | Lifetime SIDD at Wave 1 ($n = 88$) % | SE | Lifetime MDD-SUD at Wave 1 ($n = 2033$) % | SE | OR (95%CI) | *P*-value | AOR (95%CI) | *P*-value |
|---|---|---|---|---|---|---|---|---|
| Any psychiatric disorder | 96.24 | 1.96 | 100.00 | 0.00 | N/A | N/A | N/A | N/A |
| Any Axis I disorder | 95.88 | 2.00 | 100.00 | 0.00 | N/A | N/A | N/A | N/A |
| Alcohol use disorder | 80.94 | 4.10 | 91.72 | 0.78 | 0.38 (0.22–0.68) | 0.001 | 0.47 (0.25–0.86) | 0.016 |
| Alcohol abuse | 22.47 | 4.99 | 45.04 | 1.45 | 0.35 (0.20–0.64) | 0.001 | 0.39 (0.22–0.69) | 0.002 |
| Alcohol dependence | 58.47 | 5.97 | 46.67 | 1.50 | 1.61 (0.96–2.69) | 0.070 | 1.56 (0.94–2.61) | 0.087 |
| Drug use disorder | 56.43 | 7.02 | 38.85 | 1.34 | 2.04 (1.16–3.59) | 0.014 | 1.86 (1.05–3.29) | 0.033 |
| Drug abuse | 45.94 | 7.04 | 33.09 | 1.28 | 1.72 (0.98–3.00) | 0.057 | 1.58 (0.91–2.73) | 0.102 |
| Drug dependence | 33.29 | 6.25 | 11.63 | 0.87 | 3.79 (2.17–6.63) | <0.0001 | 3.36 (1.93–5.87) | <0.0001 |
| Nicotine dependence | 57.90 | 6.46 | 45.38 | 1.36 | 1.66 (0.95–2.90) | 0.077 | 1.50 (0.82–2.73) | 0.184 |
| Mood disorder | 35.61 | 7.34 | 100.00 | 0.00 | N/A | N/A | N/A | N/A |
| Major depressive disorder | 0.00 | 0.00 | 100.00 | 0.00 | N/A | N/A | N/A | N/A |
| Dysthymia | 7.24 | 3.09 | 19.54 | 0.94 | 0.32 (0.13–0.82) | 0.018 | 0.33 (0.13–0.85) | 0.022 |
| Any anxiety disorder | 42.18 | 6.16 | 45.07 | 1.46 | 0.89 (0.54–1.47) | 0.642 | 0.88 (0.53–1.46) | 0.629 |
| GAD | 6.79 | 3.40 | 14.78 | 0.98 | 0.42 (0.14–1.24) | 0.115 | 0.44 (0.15–1.28) | 0.129 |
| Panic disorder | 18.33 | 5.68 | 15.61 | 0.98 | 1.21 (0.56–2.65) | 0.622 | 1.16 (0.55–2.46) | 0.689 |
| Social anxiety disorder | 10.70 | 4.21 | 16.01 | 0.95 | 0.63 (0.26–1.54) | 0.304 | 0.64 (0.27–1.56) | 0.321 |
| Specific phobia | 23.71 | 5.43 | 22.32 | 1.19 | 1.08 (0.59–2.00) | 0.799 | 1.12 (0.61–2.08) | 0.703 |
| Psychotic disorder | 0.60 | 0.44 | 2.21 | 0.37 | 0.27 (0.06–1.23) | 0.089 | 0.25 (0.05–1.21) | 0.085 |

AOR is adjusted for race, education, and insurance. GAD = Generalized anxiety disorder

differences at Wave 1 across groups in rates of specific phobia. There were no other differences across groups in the incidence of any other anxiety disorders at Wave 2.

## DEPRESSION TREATMENT UTILIZATION

Table 4 also shows group differences in depression treatment utilization (i.e. self-reported help seeking for low mood) comparing individuals with MDD-SUD versus SIDD at Wave 1 on treatment seeking prior to Wave 1 and in between Waves. There were no differences across groups in rates of depression-related service use at Wave 1 or in between Wave 1 and Wave 2.

## ALCOHOL AND DRUG USE AT WAVE 2

The bottom of Table 4 shows rates of abstinence from substance use (alcohol and drug use) at Wave 2, comparing individuals with MDD-SUD and SIDD at Wave 1. There were no differences in drug use abstinence rates between waves between groups at Wave

**TABLE 3. Prevalence and classification of MDD-SUD and SIDD at Wave 2 as a function of Wave 1 diagnosis**

| Total sample ($n = 2,121$) | Diagnosis at Wave 1: SIDD at Wave 1 ($n = 88$) | | MDD-SUD at Wave 1 ($n = 2,033$) | | | | | |
|---|---|---|---|---|---|---|---|---|
| Classification at Wave 2 | % | SE | % | SE | OR (95%CI) | *P*-value | AOR (95%CI) | *P*-value |
| None | 71.27 | 5.45 | 58.80 | 1.34 | 1.00 (1.00–1.00) | – | 1.00 (1.00–1.00) | – |
| Independent MDD episode | 27.32 | 5.36 | 37.42 | 1.24 | 0.60 (0.35–1.05) | 0.072 | 0.58 (0.32–1.03) | 0.062 |
| SIDD | 0.77 | 0.77 | 1.76 | 0.44 | 0.36 (0.04–2.94) | 0.335 | 0.28 (0.03–2.63) | 0.261 |
| SIDD and independent episode | 0.64 | 0.64 | 2.03 | 0.36 | 0.26 (0.03–2.05) | 0.198 | 0.20 (0.02–1.68) | 0.136 |
| Any episode at Wave 2 ($n = 891$) | Diagnosis at Wave 1: SIDD at Wave 1 ($n = 30$) | | MDD-SUD at Wave 1 ($n = 861$) | | | | | |
| Classification at Wave 2 | % | SE | % | SE | OR (95%CI) | *P*-value | AOR (95%CI) | *P*-value |
| Independent MDD episode | 95.10 | 3.46 | 90.82 | 1.24 | 1.00 (1.00–1.00) | – | 1.00 (1.00–1.00) | – |
| SIDD | 2.67 | 2.66 | 4.26 | 1.04 | 0.60 (0.07–5.02) | 0.632 | 0.47 (0.05–4.62) | 0.514 |
| SIDD and independent episode | 2.23 | 2.23 | 4.92 | 0.85 | 0.43 (0.05–3.45) | 0.423 | 0.37 (0.04–3.03) | 0.346 |

AOR is adjusted for race, education, and insurance.

**TABLE 4. Incidence of Axis I disorders, depression treatment utilization, and abstinence rates at Wave 2**

| New Axis I disorder at Wave 2 since Wave 1 | Lifetime SIDD at Wave 1 ($n = 88$) | | Lifetime MDD-SUD at Wave 1 ($n = 2033$) | | OR (95%CI) | *P*-value | AOR (95%CI) | *P*-value |
|---|---|---|---|---|---|---|---|---|
| | % | SE | % | SE | | | | |
| Any new Axis I disorder | 37.65 | 6.49 | 36.15 | 1.25 | 1.07 (0.60–1.89) | 0.821 | 0.89 (0.50–1.58) | 0.685 |
| Alcohol use disorder | 5.68 | 2.52 | 9.23 | 0.78 | 0.59 (0.23–1.51) | 0.269 | 0.52 (0.19–1.39) | 0.186 |
| Alcohol abuse | 5.05 | 2.46 | 10.20 | 0.98 | 0.47 (0.17–1.27) | 0.132 | 0.46 (0.16–1.32) | 0.148 |
| Alcohol dependence | 4.25 | 4.14 | 6.79 | 0.99 | 0.61 (0.08–4.79) | 0.633 | 0.50 (0.06–4.22) | 0.521 |
| Drug use disorder | 8.10 | 4.69 | 5.85 | 0.74 | 1.42 (0.43–4.71) | 0.561 | 1.12 (0.36–3.45) | 0.842 |
| Drug abuse | 1.76 | 1.11 | 3.55 | 0.55 | 0.49 (0.13–1.80) | 0.276 | 0.39 (0.10–1.47) | 0.162 |
| Drug dependence | 6.35 | 4.59 | 2.68 | 0.48 | 2.46 (0.53–11.36) | 0.243 | 1.81 (0.44–7.44) | 0.408 |
| Nicotine dependence | 16.38 | 7.25 | 6.69 | 0.90 | 2.73 (0.90–8.28) | 0.075 | 1.71 (0.60–4.83) | 0.307 |
| Mood disorder | 13.67 | 4.33 | 9.01 | 0.87 | 1.60 (0.75–3.43) | 0.224 | 1.22 (0.54–2.77) | 0.631 |
| Dysthymia | 0.83 | 0.83 | 1.73 | 0.39 | 0.47 (0.07–3.42) | 0.454 | 0.33 (0.04–2.96) | 0.317 |
| Any anxiety disorder | 12.01 | 4.69 | 19.07 | 1.07 | 0.58 (0.24–1.41) | 0.226 | 0.49 (0.19–1.22) | 0.124 |
| GAD | 5.71 | 3.07 | 8.31 | 0.75 | 0.67 (0.21–2.08) | 0.480 | 0.58 (0.19–1.80) | 0.337 |
| Panic disorder | 3.11 | 2.20 | 4.73 | 0.58 | 0.65 (0.15–2.85) | 0.559 | 0.59 (0.13–2.73) | 0.494 |
| Social anxiety disorder | 4.71 | 2.97 | 4.43 | 0.53 | 1.07 (0.28–4.14) | 0.924 | 0.87 (0.22–3.45) | 0.839 |
| Specific phobia | 4.33 | 2.26 | 11.47 | 0.92 | 0.35 (0.11–1.07) | 0.064 | 0.31 (0.10–0.97) | 0.045 |
| Ever seek help for their low mood | 53.85 | 7.22 | 61.31 | 1.31 | 0.74 (0.41–1.32) | 0.301 | 0.88 (0.47–1.66) | 0.694 |
| Seek help for their low mood since last interview | 66.89 | 11.05 | 66.25 | 2.27 | 1.03 (0.37–2.88) | 0.955 | 1.20 (0.41–3.50) | 0.736 |
| Any drug use since last interview | 16.87 | 5.14 | 20.11 | 1.09 | 0.81 (0.40–1.64) | 0.547 | 0.67 (0.34–1.33) | 0.247 |
| Any alcohol use since last interview | 66.42 | 5.98 | 81.72 | 1.16 | 0.44 (0.25–0.79) | 0.007 | 0.51 (0.27–0.93) | 0.029 |

AOR is adjusted for race, education, and insurance. GAD = Generalized anxiety disorder

2. Regarding alcohol use, individuals diagnosed with MDD-SUD at Wave 1 were significantly more likely to have had any alcohol in between Waves compared to individuals diagnosed with SIDD at Wave 1.

# DISCUSSION

Depression and SUDs commonly co-occur, and there has been some controversy to date regarding the utility of the SIDD diagnosis given its low prevalence, shared risk factors, and clinical characteristics with independent MDD, and the tendency for SIDD to later be reclassified as MDD.[1,6,14] Despite this evidence, previous research had been limited by an exclusive focus on treatment-seeking samples,[3,6–8,12,14] cross-sectional designs,[7,8,11] relatively small sample sizes and/or short follow-up periods,[6,8,14] or a primary focus on individuals with AUDs as opposed to other SUDs.[9,10] As such, the current study compared individuals diagnosed with MDD-SUD versus SIDD on sociodemographic characteristics and psychiatric comorbidity and examined rates of reclassification over a 3-year follow up in a large, nationally representative epidemiological sample.

SIDD was extremely rare at both time points. Our findings are in contrast with other studies that have found much higher rates of SIDD in clinical samples (e.g. Langas et al., 2013; $n = 42$) but consistent with other studies using larger samples.[1,4] Going forward, continued research using large, non-clinical samples will be important to ascertain rates of SIDD found in the general population. Additionally, in line with the previous longitudinal work in this area,[6,14] among individuals with SIDD at Wave 1 who had a depressive episode between Waves 1 and 2, the overwhelming majority had an independent MDD episode, whereas only a small minority had an SIDD episode.

Comparing individuals with MDD-SUD and SIDD at Wave 1, individuals with SIDD were more likely to be non-White, have lower education levels, and less likely to have insurance. They were also less likely to meet criteria for dysthymia and alcohol abuse, the latter of which was somewhat surprising given the depressogenic effects of alcohol, but they were also significantly more likely to meet criteria for drug dependence. However, despite these potential differences in substance use severity at Wave 1, these individuals were still unlikely to be diagnosed with SIDD after 3 years. It may be that SIDD is more commonly considered diagnostically when severe drug dependence symptoms are present. Another interpretation may be that the SIDD diagnosis captures individuals at risk for developing MDD whose symptoms are precipitated by the use of substances, or that SIDD may reflect undiagnosed MDD that is precipitated by an SUD.

Additionally, there were no differences in the incidence of new substance use or mood disorders or depression treatment utilization across groups between Waves. There were also no group differences in drug use abstinence rates between Waves, but individuals diagnosed with MDD-SUD were significantly more likely

to have had any alcohol in between Waves compared to individuals diagnosed with SIDD at Wave 1. However, there were no group differences at Wave 2 in incidence of new alcohol use or drug use disorders in between thus, although there were lower abstinence rates among individuals with MDD-SUD as compared to individuals with SIDD over the 3-year follow up, the lower rates of abstinence may not reflect greater severity of problematic alcohol use during this time. Additionally, at Wave 1, individuals with MDD-SUD were significantly more likely to meet criteria for an alcohol use disorder compared to individuals diagnosed with SIDD, which may explain in part lower rates of abstinence from alcohol in between Waves.

Findings have important etiological implications. Previous studies have suggested two distinct models for diagnosing depressive episodes among individuals with SUD, with one model suggesting that MDD and SIDD are distinct disorders and another suggesting that these reflect the same disorder. The evidence supporting that the disorders may be distinct include some unique risk factors[7–9] and a differential impact on substance use outcomes over time[3,12] whereas the evidence to support that these may be the same disorder include evidence of shared sociodemographic characteristics and clinical profiles[1] and that the majority of individuals initially diagnosed with SIDD are later reclassified as having MDD.[6,14] Current findings using a nationally representative sample and a longer follow up period than used in previous studies supports the latter perspective, suggesting that SIDD and MDD may be a single disorder given numerous shared risk factors and a similar temporal course over a 3-year period, with SIDD commonly converging to MDD. Although these conclusions are tentative, present findings in conjunction with previous evidence[1,6,14] provide strong evidence contrary to the notion that these are distinct disorders. If findings continue to support SIDD and MDD being a single disorder, this may call for the need to refine existing diagnostic assessments of depression among individuals with SUDs.

Findings also have numerous implications for treatment. Currently, clinical recommendations for SIDD may include watchful waiting and abstinence prior to the treatment of depression, whereas for independent MDD diagnosed among substance users, clinical recommendations may include immediate pharmacological treatment with concurrent psychotherapy for MDD.[22] Timely, efficacious, and safe pharmacological treatments for MDD may be withheld from individuals with SIDD when, if in fact it is indeed the same disorder, it may frequently be warranted; this is further supported by evidence that combined antidepressant treatment (sertraline) and naltrexone for alcohol dependence can improve both alcohol and mood outcomes in the context of alcohol dependence and depressive symptoms.[23] Withholding treatment for depression among individuals diagnosed with SIDD may also contribute to more severe SUD outcomes in this group.[22,23] For both SIDD and MDD-SUD, findings suggest the potential utility of integrated behavioral and pharmacological treatments for depression and substance use comorbidity to account for the bidirectional impact symptoms may have on the course of each disorder.[24] Further, if the SIDD diagnosis actually reflects the development of MDD precipitated by an SUD, effectively treating symptoms of an SUD may also prevent the development of some cases of MDD. This may be particularly important in certain populations where increases in the prevalence of depression have been attributed at least in part to increases in cooccurring SUDs (i.e. African American young adult men ages 18–29).[25]

Findings should be interpreted in light of study strengths and limitations. Strengths include the use of a large nationally representative sample of adults with SIDD and MDD-SUD ascertained independently of treatment seeking, which is particularly important given the low prevalence of SIDD in the general population,[1,15] as well as a prospective design and high retention rates over a 3-year follow up period. Limitations include reliance on a single follow-up period and inclusion of only civilian households and group quarters of adults 18 years and older.

## CONCLUSIONS

Despite these limitations, findings have important etiological and treatment implications that may affect the way depressive symptoms among individuals with SUDs are diagnosed and treated. Continued longitudinal work with assessments spanning the life course is necessary to fully understand the sequencing of these disorders. This will enable future research to draw firmer conclusions regarding the stability and utility of the SIDD diagnosis.

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